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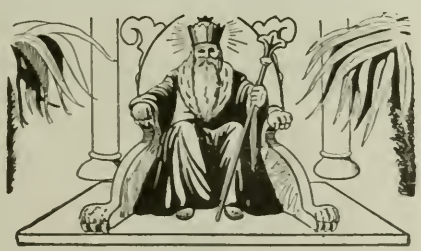

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who was noted for the pithy nature of his remarks, once said, "The lips of the wise disperse knowledge."
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SURGERY.

THE USE OF SATURATED SALT SOLUTION INTRAVENOUSLY DURING INTRACRANIAL OPERATIONS.

SACHS, E., and BELCHER, S. N. (*Jour. A. M. A.*, Sept. 4, 1920) make a preliminary report which is suggestive. They quote Weed and McKibben's recent animal experiments to show that when saturated salt solution (35 per cent.) was injected intravenously a marked dehydration of the tissues took place resulting in noticeable shrinkage of the brain volume. The authors carried out this procedure several times in one patient with a brain tumor in whom the intracranial pressure was so great as to cause a very tense and bulging dura. Post-operative use of the solution also reduced a recurring post-operative protrusion of the brain.
[E. H. R.]

PATHOLOGY.

THE VALUE OF POST MORTEM WASSERMANN REACTIONS.

GRAVES, S. (*Jour. A. M. A.*, Aug. 28, 1920) concludes from his work that:

1. In ninety controlled cases there were flat discrepancies between ante mortem and post mortem Wassermann reactions in only two.
2. In 124 cases showing evidence of syphilis, post mortem or clinical, 137, or 90.5%, gave a positive post mortem Wassermann reaction.
3. The reliability of the Wassermann test depends to a considerable extent on the care used in obtaining and keeping the blood.
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6. The post mortem Wassermann test is practically as reliable as the ante mortem test if the serum is properly taken and shows nothing unusual in the serum control tube. [E. H. R.]

THE PATHOLOGY OF INFLUENZA-PNEUMONIA.

NATHAN, O. J. (*Jour. Lab. and Clin. Med.*, December, 1919) draws the following conclusions from his experience at Camp Sherman:

The pneumococcus and hemolytic streptococcus were the most frequent secondary invaders found in the lungs at autopsy in the pneumonias at Camp Sherman. Pfeiffer's bacillus was found in only 4% of the cases.

Interstitial and lobular broncho-pneumonia can not be regarded as typical lesions resulting from the invasion by the hemolytic streptococcus. The pneumococcus was found to be the only invader just as frequently as the hemolytic streptococcus in these types of pneumonias. In fact, it is doubtful whether the type of organism isolated from pulmonary tissue in pneumonia is of any great value in determin-

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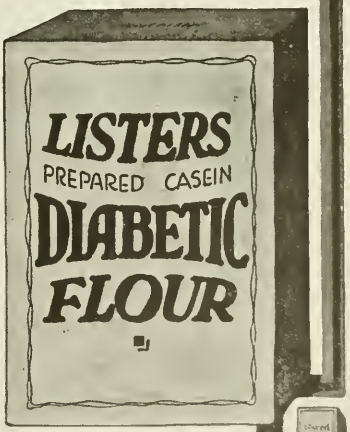

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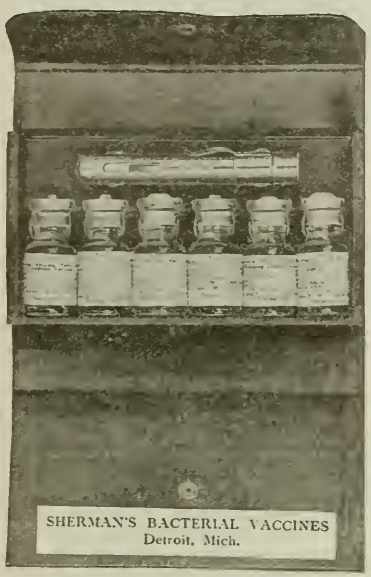

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(Continued from page iv.)

ing the type of pneumonia present, for the type of organism concerned and the type of lesion in the lung are decidedly variable at different times, even at the same station.

Influenza-pneumonia is primarily an acute hemorrhagic lesion, interstitial, nodular or massive in extent, rising from a pulmonary capillary phlebitis with disseminated capillary necrosis due to some toxic agent and resulting in a secondary purulent pneumonia with healing by organization.

The organism or organisms predominantly present in nose or throat in the individuals in any particular section of the country is the organism most commonly found in cultures and tissue sections from the lungs of secondary pneumonias in that region.

Empyema and pericarditis are frequent complications. [E. H. R.]

The Lethal Dose of Roentgen Rays for Cancer Cells.

Wood, F. C., and Price, F. (*Jour. A. M. A.*, Jan. 31, 1920) draw the following conclusions from their observations:

The practical conclusion which may be drawn from these observations is that the amount of roentgen ray necessary to kill all the cells of a rapidly growing, very cellular, and highly malignant sarcoma or carcinoma in man is between five and seven erythema doses of filtered roentgen ray, when the tumor is on the surface of the body. Every centimeter of tissue that covers the tumor makes an additional amount of roentgen ray necessary. For example, when slices of fibroid uterus are used as absorptive material, the galvanometer deflections show that at a depth of two cm., 19% more roentgen ray is required; at five cm. depth, 47% more, and at 10 cm. depth, 65% more. While many tumor cells may possibly be slowed in their progress and mitotic forms killed at such depths, it is doubtful whether all can be destroyed. The basal-cell tumors and the lymphosarcomata are, as is well known, much more susceptible to radiation. Small, superficial, metastatic carcinomata are also, in some instances, more susceptible than is the primary tumor. [E. H. R.]

Anaphylactic Death in Asthmatics.

Broughton, J. H. (*Jour. A. M. A.*, Dec. 27, 1919) reports an illustrative case and summarizes his article as follows:

A certain proportion of asthmatics (four per cent. in Walker's series) are sensitive to horse serum. In these the injection of horse serum (antitoxin) may produce serious symptoms or death. As compared to nine previously recorded cases of anaphylactic death in asthmatics, an added case, in which death resulted from the intravenous injection of one minim of horse serum, presents an instance of the smallest amount of serum that has produced death in any recorded case. Both the gross and microscopic appearance of the organs at necropsy show a striking similarity to lesions previously described in experimental anaphylaxis. There is uncertainty in existing methods of desensitization. Asthmatics who require curative or prophylactic sera should be tested by the cutaneous method to determine their sensitiveness to horse serum. If they are not sensitive to horse serum, therapeutic doses of antitoxin are probably safe. It might be well to prepare antitoxins from other animals than the horse for use in patients sensitive to horse serum. [E. H. R.]

(Continued on page viii.)

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(Continued from page vi.)

THE CLINICAL RÔLE OF THE FAT-SOLUBLE VITAMINE; ITS RELATION TO RICKETS.

HESS, A. L., AND MEYER, L. J. (*Jour. A. M. A.*, Jan. 24, 1920) feel that the data regarding the etiology of rickets are too meagre and inadequate at the present time to warrant the drawing of any definite conclusions. It is even questioned whether rickets is really a disorder of nutrition in the sense of being of dietetic origin. Their study shows that the fat-soluble vitamine is not the controlling factor; that infants develop rickets while receiving a full amount of this principle. Finally, their work seems to show that the danger to infants of a diet deficient in fat-soluble vitamine is slight, provided it includes sufficient calories and is vitamine complete. [E. H. R.]

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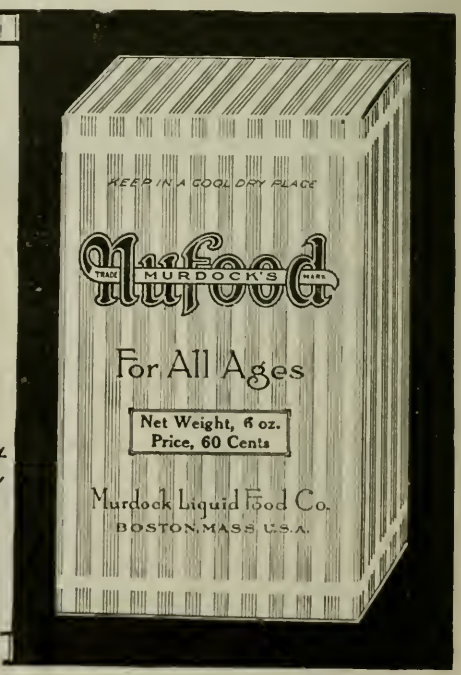

The Boston Medical and Surgical Journal

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A CLINICAL APPARATUS FOR MEASURING BASAL METABOLISM.

By Francis G. Benedict, Boston,
and
Warren E. Collins, Boston.

[From the Nutrition Laboratory of the Carnegie Institution of Washington, Boston, Mass.]

While the Nutrition Laboratory is amply provided with numerous types of respiration apparatus for studying intricate problems in nutritional physiology, the interest of clinicians in respiratory exchange has influenced the trend of our development of experimental apparatus the past few years. Since it was recognized that the costly respiration calorimeters were impracticable, even for some of the best equipped hospitals, a simplified respiration chamber[1] apparatus was constructed and has been used in at least three hospitals. The great obstacle to studies of respiratory exchange has been the necessity for a complete equipment for gas analysis. To avoid this an apparatus was devised whereby the oxygen consumption could be read directly as the contraction in volume of a spirometer bell, and the carbon-dioxide production could be obtained by weighing certain bottles. This apparatus was described under the title, "A portable respiration apparatus for clinical use."[2] Subsequent to its description extensive comparison tests of this apparatus with standard respiratory-valve apparatus were carried out, in which three breathing appliances were employed and a large number of unpracticed, normal subjects were studied. These tests showed that the "portable apparatus" gave results in full accordance with the standard respiratory-valve method.[3] The fact that no gas analysis was involved led early to the adoption of this portable apparatus by a relatively large number of clinicians.

While, as was stated in the original description of the apparatus, when compared with the very cumbersome respiration chambers and the battery of spirometers and gas analysis apparatus employed in most other methods, this apparatus is portable or, more properly speaking, transportable, since it can be moved from ward to ward or even from bed to bed in a hospital, nevertheless criticism has justly been made that the apparatus is not, strictly speaking, portable, and apparently in the minds of clinicians a truly portable type is much to be desired.

In a recent series of notes[4] dealing with the portable apparatus, attention was called to the fact that in the use of an electric blower to move the air current we were unfortunate enough to select one, the manufacture of which has since been discontinued. To overcome this

difficulty, recommendations were made to install an outer positive blower directly connected with an electric motor. Believing firmly that, in spite of all adverse criticism against having the electric motor *inside* the air current, that the method employed in the original type of apparatus of moving the ventilating current of air by means of a small, high speed, rotary air impeller was the most satisfactory, we have continued our tests of various types of blowers and motors and incidentally have somewhat modified the original form of portable apparatus, so that now we feel perfectly justified in presenting it to clinicians as a truly portable apparatus. The spirometer remains essentially unaltered. Fortunately we have been able to find a hair dryer, commercially long established and well distributed, which with very slight modifications may be used in place of the original instrument recommended. Concessions in the line of portability have been made by making the support of the wheel carrying the counterpoise and bell collapsible and, finally, the soda-lime used as an absorbent for the carbon dioxide, instead of being placed in a heavy glass bottle, has been enclosed in a well-fitting can placed below the hair dryer inside of the spirometer itself. The details of the whole apparatus are shown in general in Figure 1.

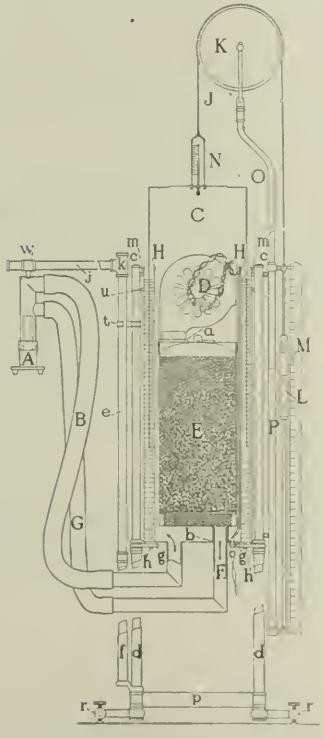

FIG. 1. RESPIRATION APPARATUS. *A*, mouthpiece; *B*, tube conducting expired air to bell *C*; *D*, hair dryer; *E*, soda-lime container; *F* and *G*, tubes conveying air current to mouthpiece *A*; *HH*, tank in which bell *C* floats; *J* and *K*, cord and pulley supporting bell *C*; *L*, counterpoise; *M*, pointer on counterpoise; *N*, thermometer; *O* and *P*, supports for pulley *K*. *a*, rubber gasket; *b*, rubber gasket, *c*, *c*, tubes supporting spirometer; *d*, *d*, lower part of frame supporting spirometer, *e* and *f*, telescoping tubes supporting mouthpiece and tubing; *g*, *g*, supporting plates, *h*, *h*, knobs fitting into *g*, *g*, *jk*, part of support for mouthpiece and tubing; *mm*, attachment to support *c*, *c*, to tank *HH*, *p*, circular band connecting four tubes, *d*, *d*; *r*, *r*, levelling screws; *t*, sliding ring; *w*, knobs for support of apparatus when collapsed; *w*, sliding ring.

The underlying principles of this apparatus are established by a number of researches which have taken place in this laboratory for a number of years past; particularly that the inhalation of an oxygen-rich atmosphere does not materially modify or alter the respiratory exchange.[5] The Emmes modified method of reading makes it possible to do away with the 3-way valve. Since the main clinical use of such apparatus is for the determination of oxygen, the calcium chloride bottles necessary for the determination of carbon dioxide may be discarded. In the new apparatus the spirometer itself contains practically the entire ventilating air system, including the blower and the soda-lime can. The details of the various modifications and parts of apparatus are as follows:

Modification of Spirometer. The type of spirometer first described in the portable respiration apparatus has undergone slight, though important, modifications. To make room for the soda-lime can,* the bottom in the spirometer, which in the original apparatus was about three-fourths of the way up and was used as a support for the hair-dryer, has now been removed and replaced by a true bottom upon which the soda-lime can may rest. This bottom contains two short pipes, one coming from the mouthpiece and the other leading to it. The support, O (Figure 1), for the aluminum counterpoise wheel, K, instead of being double is now single, with a slight offset, and is so made that it can be telescoped when the apparatus is being transported.

* When this apparatus was nearly completed we learned through a personal communication that Dr. J. H. Means of the Massachusetts General Hospital had placed a soda lime container in the space occupied by the hair dryer in the earlier form of the portable respiration apparatus.

Hair Dryer. We have been fortunate in securing a hair dryer,* D (Figure 1), which with but slight modifications fits perfectly into the original type of spirometer. This, we believe, will be of interest to those who are already in possession of the original portable apparatus and have had difficulty in securing hair dryers. This hair dryer is substantially made, with a cast aluminum housing, and for use in this apparatus is divested of heating unit, handle and switch; in fact, the air discharge nozzle must be cut off for about 4 cms. That part to which the handle is attached is likewise somewhat cut off (12 mm.) and the leads brought out and connected with the plug attached to leads coming up inside of the spirometer, as shown in Figure 1. This hair dryer has been upon the market for many years and we are assured by the manufacturers that they have every intention of continuing its manufacture, as it is a well established article of trade. It gives most satisfactory results and, as will be seen later, the electric current can be cut down materially by external resistance.

Soda-lime Can. In the construction of the soda-lime can we were governed by the fact that the hair dryer can immediately force the air through soda-lime and thus deprive it of carbon dioxide and send it in a respirable condition to the mouth. A very simple form of can E, (Figure 1), has resulted. It consists of a galvanized iron can, in the bottom of which there is an opening somewhat off center to fit conveniently over the discharge pipe, F, from the spirometer, *i.e.*, leading the air to the mouth. The top of the can is removable and likewise has an opening set off center sufficiently to take the discharge end of the hair dryer. The interior screen and layers of cheese cloth to prevent the discharge of dust from the soda-lime are shown in Figure 1. Soda-lime such as is commonly used in all respiration apparatus of this type may be employed. We have recently employed successfully the soda-lime used in war gas masks. While under ordinary conditions it is absolutely essential to have the soda-lime fairly moist to absorb carbon dioxide to its greatest efficiency, in this particular type of apparatus where the air enters the soda-lime moist from the lungs almost any kind of soda-lime will do. To keep the cap in place, a good, stout, rubber band is snapped around it. Where the can fits over the pipe in the bottom of the spirometer, it rests against a rubber ring gasket, *b*, thus making a reasonably tight closure. A gasket, *a*, is used where the hair dryer is attached at the top.

Ventilation Tests. As a result of a great deal of experience in the laboratory, it has been deemed desirable that the air current in any of the several types of closed circuit apparatus should blow not less than 25 liters per minute by the mouthpiece to prevent rebreathing. The hair dryer will discharge a very large volume of free air and consequently it is necessary to cut down the rate of discharge by external electrical resistance, usually by a 120-watt lamp directly in series, and even under these conditions with ordinary soda-lime we find that there is no difficulty in getting a delivery of 60 liters of air. Where the finer soda-lime, such as that used in gas masks, is employed, the resistance to the air passage is somewhat higher, so that about 35 liters are secured with an external resistance of 120-watt lamp. The testing of the ventilating conditions existing in the soda-lime cans is fortunately very easily carried out. With the motor running, the bell, C, filled with air, and the thumb over the mouthpiece, A, an assistant at a given signal forcibly collapses the air pipe, B, leading from the mouthpiece to the spirometer, *i.e.*, the larger of the two rubber tubings. At the same instant the thumb is removed from the mouthpiece, the bell instantly starts to descend and the length of time it requires to make a complete descent is noted. These bells should travel over a distance corresponding to not far from 9 liters and consequently 9 liters in 20 seconds or less is ample ventilation. Indeed, there is a certain disadvantage in having too high a ventilation, primarily on account of the unnecessary heating of the motor, and secondarily on account of the fact that the less current passing through the motor the greater the factor of safety in case of accident, stoppage of motor, with building up of current, burning out of resistance, and combustion in an oxygen-rich atmosphere.

Danger of Combustion. Much has been said with regard to the fact that the earlier types of hair dryers have not infrequently "burned out." In a recent series of notes,[6] this subject was discussed in considerable detail. With the new form of apparatus an external lamp in series with the hair dryer is essential. The

* Manufactured by the Hamilton-Beach Mfg. Co., Racine, Wis., designated as "Hair dryer No. 2."

glowing of the filament, which is usually a little less than half brightness, is likewise an indication that the current is on. A series of tests has shown us that with the Hamilton-Beach hair dryer, when the current is first turned on, about 0.85 ampere is required to start the blower. This then instantly settles down to about 0.50 ampere, at high speed. With the 120-watt lamp in series the highest current at starting the motor is about 0.45 ampere, settling down to about 0.35 ampere. If the motor should accidentally become stopped and full current were left on it, 0.85 ampere would probably in a very short time result in burning out of the armature or field coils and possibly in vigorous combustion. With 0.45 ampere the danger of combustion is, we believe, almost eliminated. Meanwhile the operator has two distinct signals: first, the slight, though ever present and noticeable sound from the motor; second, the glowing of the filament of the external resistance lamp. With these two danger signals no operator fit to be trusted with human metabolism measurements should have difficulty in avoiding combustion.

Mouth-breathing Appliance. In the universal respiration apparatus[2] connection between the mouth and the closed circuit of air was made by the 3-way valve. This same procedure was followed with the portable apparatus, but the Emmes method of reading the portable apparatus makes it possible to conduct experiments without regard to the exact moment at which respiration begins and ends on the apparatus. This is true, however, only in the type of experiment in which oxygen alone is to be measured. Where carbon dioxide is to be measured, as in the original portable apparatus, the 3-way valve is necessary. With the new apparatus oxygen alone is determined.

From extensive correspondence it appears that practically the only use of the original "portable" respiration apparatus is for oxygen measurements, although, as shown by the comparison tests of Hendry, Carpenter, and Emmes,[3] the apparatus is perfectly satisfactory for the measurement of carbon dioxide. For the determination of oxygen alone it is possible to eliminate much of the somewhat cumbersome valve system and pipes formerly employed. A rubber tube, G, 5/8 inch internal diameter, brings the air from the blower to a light metallic pipe to which the rubber mouthpiece, A, is attached, and the air is returned to the spirometer in a rubber tube, B, 1 inch inside in diameter. The stem of the rubber mouthpieces ordinarily used is long enough to be clasped between the thumb and finger to cut off the air current momentarily while filling up with oxygen; this stem can likewise be collapsed by a large spring clamp or can be placed in the mouth and collapsed by the teeth. The nose-clip* may then be attached and the subject begin respiring air from the apparatus at any time.

Supplementary Modifications. Although the most fundamental alterations pertain to the spirometer and soda-lime can and attachment of blower, we have added for the sake of convenience a light metallic frame or support for the spirometer and air circuit, and have adjusted all parts so as to be more or less collapsible and thus occupy minimum space and facilitate transportation. Figure 1 shows the supporting frame partly extended and with portions cut away. The spirometer is supported by means of four upright tubes (two shown), *c c*, which telescope inside of four tubes, *d d* (shown cut away). The rubber tubes B and G and mouthpiece, A, are supported by the arm, *j*, and the telescoping tubes *e* and *f*.

When the apparatus is in use the arm O supporting the pulley K is extended out of the tube P to such a height that the bell C can be filled to its fullest extent. The tubes *c c* which are attached to the cylindrical tank H H at *m m* are raised up out of the tubes *d d* to their full height and the tank H H engages four supporting plates *g g* by means of the knobs, *h h*. In order to bring the mouthpiece to a proper height and distant enough from the apparatus, the tube *e* is pulled out of *f* and a side arm *j* is screwed into the tee *k*. The ring *w* permits movement along the tube *j*. The tube *j* is shown broken in the figure. A movable ring *t* prevents the side arm *j* and the upright *c* from bending outwards due to the weight of the mouthpiece A and tubes B and C. Figure 2 is a photograph of the apparatus completely extended and ready for use.

When the apparatus is to be carried, the support O is telescoped into the tube P, the bell C is lowered into the tank H H. The supporting plates *g g* are disengaged from the knobs *h h*, rotated outwards, and the tank H H and the attached four tubes *c c* lowered until the supporting plates *g g* come above the knobs *u*. The supporting plates are then rotated inwards un-

* Of the various types of nose-clip we have found that of Siebe-Gorman on the whole most satisfactory. (Supplied by H. N. Elmer, 1140 Monadnock Building, Chicago, Ill.)

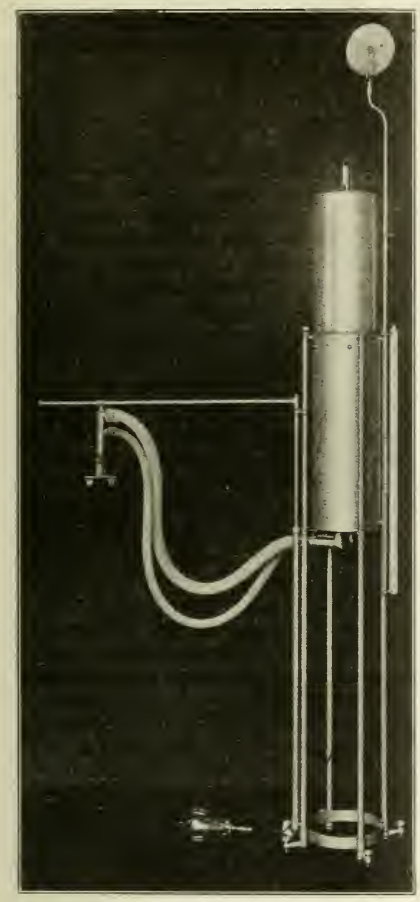

Fig. 2. Respiration Apparatus. The apparatus is shown here extended and ready for use. At the left are the mouthpiece and tubes; at the top, the bell, partly filled, and support above; at the right, the millimeter scale. Below is the electrical attachment and the framework for supporting the apparatus. The total height is 190 centimeters and the width at the base is 30 centimeters.

til they come above the knobs *u*. When the apparatus is picked up by a handle (not shown) attached to the upper ends of two of the tubes *c c* the knobs *u* engage in the four plates *g g* and thus the apparatus can be carried. The arm *j* supporting the rubber tubing can be unscrewed from the tee *k*, then rotated 90 degrees and telescoped inside of *c*, and *e* telescoped inside of *f*. A circular band *p* connects all four tubes *d d*. The screws *r r* permit levelling of the apparatus.

Oxygen Supply. With the practically universal medical use of oxygen in hospitals and the ever increasing industrial use of oxygen in nearly every well equipped garage and in most all machine shops, the supply of compressed oxygen is almost universally available. Where this is not the case, attention should be called to the fact that oxygen may be readily and easily prepared by the use of sodium-peroxide and water in apparatus not unlike the simple form of acetylene generator used in automobiles or motor cycles. One such device was mentioned in the description of the universal respiration apparatus.[19] Since practically the only impurity occurring in compressed oxygen, either of the medical or commercial type, is nitrogen and argon or very minute traces of hydrogen, it can be seen from a consideration of the method of measurement here used, namely, reduction in volume, that the purity of the oxygen plays absolutely no rôle.

Method of Use. While the reader is referred to the three earlier papers for the many details of the determination of the basal metabolism by means of the portable apparatus, the method of use of the new type may be briefly summarized as follows:

Half-hour period of complete repose on the part of the subject.

Attach stethoscope for pulse and record pulse during repose.

Oil blower and run it a moment or two before putting bell in place.

Test ventilating rate, as outlined in text of this paper.

Insert mouthpiece, shutting off connection to apparatus by fingers or by clip.

Fill apparatus with pure oxygen, starting from bell at lowest point.

Start blower.

Remove clip connecting mouthpiece to apparatus and attach nose-clip.

When respiration is regular take three initial readings of spirometer counterpoise position, temperature of bell, and exact times as outlined in a subsequent paragraph.

Read thermometer in bell.

After about 8 or 9 minutes repeat series of readings of spirometer position, temperature of air in bell, and time.

Take off nose-clip, stop motor, remove mouthpiece.

Method of Recording Data. In the original portable apparatus the use of a stop watch was recommended, and with the Emmes modified method three-stop watches were considered necessary. A simple and most satisfactory method for recording data has been worked out as fol-

lows. The operator uses his ordinary watch, on which, however, care has been taken to set the minute hand to agree reasonably well with the second hand. After the subject is connected with the respiration apparatus, the nose-clips applied, and the respiration has become regular, *i.e.*, within a few seconds, the operator notes the position of the pointer on the counterpoise at the end of three or four successive exhalations. Due to the continual absorption of oxygen the bell should fall slightly during each respiration, and consequently the counterpoise pointer steadily, though slightly, rises each time. The operator then immediately writes a final reading, for example, 378 mm., on a pad or tablet and, *after he has written this*, he instantly notes the position of the second hand, for example, 23 seconds, and records it. *Immediately* afterwards he carefully notes the positions of the minute and hour hands. While the reading of the scale of 378 mm. may not occur at, for example, the recorded 8 hours, 58 minutes, 23 seconds, but, more strictly speaking, did occur more nearly at 8 hours, 58 minutes, 13 seconds, owing to the latency of the time required to write down the figures 378 mm. and 23 seconds, nevertheless, we have found that the latency is practically the same for all records and since the periods are always from 9 to 14 minutes long and essentially the same degree of latency is noted at the beginning and end of each set of readings, no error is thereby introduced. This method has other distinct advantages in that one can in the final computations note the drop in the spirometer bell between the first and the last reading at the end of the test, or can make any arbitrary combination of readings for computation purposes. Thus one can use the two outside or first and last readings to give the longest period of experimenting, and the two inside readings to give the shortest, and note if there is any material difference between short and long experiments.

Physiological Tests of the New Apparatus. In presenting the original portable apparatus it was especially stated that it could not furnish results of the physiological importance that could be obtained with a complete respiration calorimeter, which yields simultaneously measurements of carbon-dioxide production, oxygen consumption, water vaporized, and direct heat production, or with a respiration chamber like the clinical cot chamber, which measures these first three factors but not the direct heat; and, indeed, it was not maintained that it could furnish as accurate results as the respiratory-valve apparatus. As a concession to rapidity of computation particularly, certain rule of thumb procedures were introduced. The truest proof of the practicability of the apparatus in measuring oxygen consumption and carbon-dioxide production of men was shown by an extensive series of well agreeing comparison tests made with a group of young men in Springfield, Mass.,[10] and more especially wit ha group of 17 medical students studied by Hendry, Carpenter, and Emmes.[11] Under the circumstances, therefore, we can assume that the original portable apparatus gives results, particularly for oxygen, fully as satisfactory as any of the older and more complicated types of respiration apparatus. It seems perfectly feasible, therefore, to compare the metabolism as measured on the new portable apparatus with that measured on the old, on the assumption that the old apparatus has been thoroughly tested. For this purpose several series of tests have been made in which the subject, in the post-absorptive state, was connected alternately with the new and with the old apparatus, two or three periods being run with each. In these tests, however, no attempt was made to weigh the soda-lime bottles in the old apparatus.

In the first series of tests with the new apparatus (May 26, 1920) the hair dryer was allowed to run at full speed, that is, with the full strength of current through it, and with a ventilation which has been shown to be over 100 liters per minute passing by the mouthpiece. The idea of this was to note any undue heating or even combustion. Owing to a misunderstanding on the part of the operator the readings on the spirometer were begun with the stop watch in the originally described method, and full advantage was not taken of the entire time the subject was breathing through the mouthpiece, since the three successive periods were started one after the other and each lasted about 10 to 12 minutes, while, as a matter of fact, the subject was actually breathing on the apparatus approximately 16 minutes. By the method of reading outlined above a 15 to 16-minute period could have easily been obtained.

We have, therefore, three intertwined periods in each series of tests, and the computation for each period is based upon the reading of the spirometer at a given time at the beginning of

Table 1.—Comparison of Measurements of Oxygen Consumption as Obtained with the New and the Old Portable Respiration Apparatus. (Subject, F. G. B., 49½ years, 76.0 kgs., 183 cm., May 26, 1920.)

Measurement	Period I (New)	Period II (Old)	Period III (New)	Period IV (Old)	Period V (New)	Period VI (New)	Period VII (Old)
	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
a	231	228	---	232	231	229	228
b	237	227	228	230	225	227	244
c	240	230	223	234	230	229	239
Average	236	228	225	232	229	226	237
Pulse	63	61	61	58	57	56	57

a test and upon the reading at the end of the test, with the elapsed time noted on a stop watch. The entire comparison is shown in Table 1 with average values at the bottom. Period V and Period VI were run consecutively on the new apparatus. Of special interest is perhaps the agreement of the individual, intertwined periods among themselves. In Period I and Period VII the agreement is by no means as close as it is in the others. Theoretically one would expect that differences would be accounted for only by irregularity in respiration, which would cause a difference in reading of the spirometer level at different times. This again illustrates the fact that the entire method of studying gaseous metabolism with the portable respiration apparatus of either the old or the new type, indeed with the universal respiration apparatus, depends upon the legality of the assumption that the residual volume of air in the lungs is the same at the end of each normal respiration, a fact that we believe has been amply proved by the study of the innumerable graphic tracings and records taken in connection with experiments of this type in this laboratory.[12] But what is of most importance in this particular study is the comparison of the average results between the new and the old apparatus.

The average values for the three series on the old apparatus give an average oxygen consumption of 232 c.c. per minute. The average of the four values on the new apparatus gives an oxygen consumption of 230 c.c. We have every reason to believe that the average value obtained in the first series with the new apparatus is slightly high, owing to the fact that complete muscular repose had not been obtained, and that the average value for the seventh series is likewise probably high, owing to slight discomfort resulting from the unusually long series of tests. In any event the comparison shows very satisfactory agreement. The average pulse for each period is likewise given in the table and shows a slight tendency to fall off throughout the day.

The method of computing employed in connection with the old portable apparatus was used without any modification, namely, the difference in the spirometer bell readings was assumed to be the contraction in volume, and the temperature in the spirometer bell read at the beginning and end of the experiment was averaged, the barometer was recorded, and this contraction in volume reduced to 0° and 760 mm. by the usual method. There was then applied a small empirical correction of 1 c.c. per minute for each degree (Fahrenheit) rise in temperature of the bell.* In the development of this method of computation, as presented in the description of the original apparatus, concessions were freely made to rapidity of calculation and a certain degree of empiricism was allowed to enter. Theoretically, one might consider it more logical to reduce the volume of air in the old apparatus at the beginning of the test to 0° and 760 mm. and reduce it likewise at the end of the test to 0° and 760 mm., and consider the difference as the oxygen absorbed. One great practical difficulty enters into this, both with the old portable apparatus and even more so with the new, namely, the fact that inside of the air current there is a very widely different temperature gradient. There is the heat of the motor, the cooling effect of the water vaporized from the walls of the spirometer bell as it rises and falls, the liberation of heat as the water vapor and carbon dioxide are absorbed by soda-lime and the obvious cooling effect of the room air as the air passes through the several pipes. To secure an average temperature of this system is extremely

* Thus far we have not been able to secure a satisfactory light weight centigrade thermometer to replace the Fahrenheit.

TABLE 2.—COMPARISON OF MEASUREMENTS OF OXYGEN CONSUMPTION AS OBTAINED WITH THE NEW AND THE OLD PORTABLE RESPIRATION APPARATUS. (SUBJECT, F. G. B., JUNE 1, 1920.)

Period No. and apparatus	Measurement	Pulse rate	Observer I		Observer II	
			Length of period	Oxygen per min.	Length of period	Oxygen per min.
			mins.	c.c.	mins.	c.c.
I (New)	a	----	9.82	247	9.97	246
	b	----	9.50	245	9.67	246
	c	----	9.18	241	9.25	242
	Average	67	----	244	----	245
II (New)	a	----	9.22	237	10.33	238
	b	----	9.55	232	10.53	236
	c	----	9.18	238	10.30	234
	Average	63	----	236	-----	236
III (New)	a	----	9.07	240	13.25	240
	b	----	9.05	235	10.08	234
	c	----	8.83	236	6.60	235
	Average	60	----	237	-----	236
IV (Old)	a	----	11.95	236	13.08	239
	b	----	9.13	233	10.12	235
	c	----	6.30	235	7.07	230
	Average	60	-----	235	-----	235
V (Old)	a	----	12.43	237	13.22	237
	b	----	9.70	232	10.70	232
	c	----	6.32	236	7.50	233
	Average	62	-----	235	-----	234
VI (Old)	a	----	11.95	239	12.90	243
	b	----	9.02	237	10.00	238
	c	----	6.35	237	7.23	239
	Average	60	-----	238	-----	240
VII (New)	a	----	12.15	244	13.23	242
	b	----	8.95	230	10.10	235
	c	----	5.73	227	6.70	229
	Average	61	-----	234	-----	235
VIII (New)	a	----	12.97	224	13.35	244
	b	----	8.42	238	9.38	241
	c	----	4.80	240	5.54	259
	Average	61	-----	234	-----	248

difficult and would be a practical impossibility for clinicians, and would enormously complicate their method of computation. We wish to caution any who feel tempted to study the "constants" of this apparatus, for we have spent many hours on the same problems and have come to the conclusion that the practical difficulties in the way of exact temperature measurement at all points of the apparatus, with a proper method of averaging, are such as to rule it out from use. Since this apparatus is primarily for the practical purpose of measuring the oxygen consumption alone of patients in the hospital and since by this method of computation the apparatus, the old apparatus at least, has shown astonishing agreement with the other accepted forms of studying respiratory exchange, we believe that the empirical rules laid down for these calculations are just.

The keen critic may very properly take the ground that in the comparison experiments made by Hendry, Carpenter, and Emmes, where the old portable apparatus was compared with the respiratory valve apparatus, one factor was not sufficiently controlled, that is, the effect of *consecutive* periods. With the portable apparatus during the first period there is consider-

able warming up of the motor, and the warming of the soda-lime, due to the absorption of carbon dioxide and water vapor. In the comparison tests referred to one experiment was made. There was then a considerable period of time, a half hour or more, while a test with another type of apparatus was made, and not until then was there a return to the original apparatus, during which time there would obviously be a considerable cooling. On the other hand, in practical experience the portable apparatus is invariably used for successive periods and hence it seemed necessary to conduct a test so that a number of repeated periods could be compared. It was this thought that stipulated Series V and VI in Table I, and it is of great interest to note there that the average results from the two series are 229 and 228 c.c., respectively. Still, the importance of this point and the necessity for still further checking the new apparatus led to a second series of physiological tests on the same subject a few days later.

In this test the order was as follows. There were first three periods of approximately 15 minutes each on the new apparatus and then three on the old apparatus, and finally two on the new apparatus. A 120-watt lamp in series with the hair dryer was used in this and the subsequent series with the new apparatus. In this series of tests two different observers were employed and the reading of the pointer on the counterpoise weight at the beginning of each test noted on the ordinary watch, as described above. The results are recorded in Table 2.

This table shows not only the comparison between the results obtained on the new and old portable apparatus but likewise shows the agreement in observations between two different observers, and it is deemed of importance to indicate here the length of period, to show what differences may be expected in short periods compared to long periods. With regard to the first comparison, namely, the values between the new and old apparatus, it can be seen that the same degree of uniformity shown in the first series of tests given in Table 1, obtains here, and it may properly be said that the new apparatus gives results for oxygen consumption in perfect accord with the old portable apparatus. The agreement between the different observers is also all that could be expected.

When the averages alone are considered, it is seen that only in period VIII is there a difference of over 2 c.c. per minute. The irregularities in period VIII appear for the most part to be in record *a* with observer I and in record *c* with observer II. No satisfactory explanation is at hand. In general the values are essentially the same, irrespective of the length of period, although theoretically, at least, the longer the experiment the more reliable the result. The pulse rate shows also high values in the first period, which are reflected by the somewhat higher oxygen consumption. The average values, as a whole, after the first period, are slightly above those noted on May 26, given in Table 1. The nude body weight was not recorded on June 1, but was probably not far from that of May 26, *i.e.*, 76 kilograms.

In the development of this final form of portable respiration apparatus we have been much assisted by the keen criticism of Dr. Thorne M. Carpenter of the Nutrition Laboratory staff, whose wholly unusual experience with the various forms of respiration apparatus makes his requirements especially strict. Dr. Carpenter kindly pointed out that any basic error in the new apparatus might, to a certain extent, be overmasked by the large oxygen consumption

TABLE 3.—COMPARISON OF MEASUREMENTS OF OXYGEN CONSUMPTION AS OBTAINED WITH THE NEW AND THE OLD PORTABLE RESPIRATION APPARATUS. (SUBJECT, T. M. C., 42 YRS., 48.0 KGS., 165 CMS., JUNE 3, 1920.)

Measurement	New apparatus						Old apparatus			
	Period I		Period II		Period III		Period IV		Period V	
	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.
	mins.	c.c.	mins.	c.c.	mins.	c.c.	mins.	c.c.	mins.	c.c.
a	14.73	176	14.05	173	11.60	171	14.05	167	13.45	169
b	11.53	173	11.63	171	9.45	169	10.30	167	10.00	168
c	8.37	170	8.97	172	6.97	170	7.13	165	7.00	166
Average	-----	173	-----	172	-----	170	-----	166	-----	168
Pulse	-----	71	-----	68	-----	65	-----	62	-----	61

of the subject used in Tables 1 and 2, and that the comparison between the two types of apparatus might best be made with a subject having considerably smaller oxygen consumption. He kindly consented to serve as subject in the post-absorptive condition for another set of comparisons, the details of which are given in Table 3. Three consecutive periods on the new apparatus were followed by two periods on the old apparatus. Making allowances for the difference in time after lying down and the difference in pulse rate, it is seen that the agreement between the two forms of apparatus is all that could be expected. The agreement between the separate records, *a*, *b*, *c*, of each period is even closer than that recorded in the other tables. Rarely is there a difference of 6 c.c. and in all except the first period the extreme difference was 3 c.c. Both subjects found no difference in the ease of respiration or sensations on the two forms of apparatus.

Summary. To fill urgent clinical needs the portable respiration apparatus has been modified, reduced in weight, and provided with support and stand so as to make it a strictly portable apparatus. Without gas analysis, without weighings of any kind, the oxygen consumption of patients may be studied by this apparatus in the customary 10 to 15 minute periods, with an accuracy fully equal to other standard methods of studying respiratory exchange. A simple method of timing the readings of the position of the spirometer bell eliminates the use of stop watches. Three series of comparison tests on two different subjects with widely varying basal oxygen requirements show that the most satisfactory results can be obtained.

As we go to press Dr. Paul Roth of the Battle Creek Sanitarium writes us that he has tested one of the new forms of apparatus there and for ease of manipulation and accuracy of measurements finds it most satisfactory.

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ORCHITIS IN MUMPS.

BY CONRAD WESSELHOEFT, M.D., BOSTON,
Visiting Physician, West Department (contagious), Massachusetts Homeopathic Hospital.
[From the Evans Memorial Hospital, Boston.]

(Continued from page 430.)

ORCHITIS PRECEDING PAROTITIS.

A number of cases are on record where—during a mumps epidemic—orchitis has preceded parotitis by one to nine days. A striking case of this kind is described by Torpey,[47] in which a young man of eighteen was taken on December 13, 1910, with a left orchitis, which was followed in six days by a right orchitis. Several days later, while recovering from the orchitis, and when much improved, he developed a bilateral parotitis typical of mumps then epidemic in the locality. Gonorrhea as a cause of the orchitis was ruled out. Complete recovery followed. Feiling[48] reports a case of double epididymitis preceding double orchitis, which was followed in four to six days respectively from the onset in the two testicles by involvement of the submaxillary glands, the parotids remaining unaffected. In the case reported by Neumann[49] the parotitis followed six days after the orchitis. In the four cases of Edwards[50] the parotitis followed the orchitis in two to three days, and in the case of Burnett[51] in one day.* I have collected 30 cases of this variety of mumps from the literature. (See Table III.)

* I recall a case from my own experience, where a soldier showed a mild unilateral orchitis preceding a swelling of the submaxillary glands without fever. The diagnosis of mumps was considered at the time but not established, and the man remained on full duty. There was a remote possibility of exposure, but no other cases of mumps developed. It seemed doubtful at the time that venereal disease could be present, but a history of slight trauma to the testicle two days before the onset was given. It is possible that the trauma merely called attention to the orchitis, which may have been of mumps origin. However, I made no diagnosis at the time, and I do not feel justified in including this case as a good example of this type.

TABLE III.

PRIMARY TESTICULAR MUMPS.

AUTHOR	REFERENCE	NO. OF CASES
Boyer	cited by 1	7
Vidal	" " 1	3
Bussard	" " 1	2
Plagneux	" " 1	4
Crevoisier	" " 52	1
Jourdan	32	2
Ribierre	53	1
Torpey	47	1
Neumann	49	1
Feiling	48	1
Rizet	38	1
Waddelow	54	1
Edwards	50	4
Burnett	51	1
TOTAL		30

ORCHITIS WITHOUT PAROTITIS.

During epidemics of mumps, cases of orchitis occur without any apparent preceding or subsequent involvement of the parotid or other salivary glands, and where all possibility of venereal disease or trauma can be excluded. In these cases the course of orchitis is comparatively mild. It is possible that the involvement of the salivary glands may be so mild as to escape detection. This is suggested in Hammersley's[43] report on the epidemic in the prison of New York in 1821, where out of 80 cases of mumps there were 17 cases of orchitis, six of whom showed no signs of parotitis, and also in Heller's report of the epidemic at Danzig in 1876, where among 26 cases of testicular mumps in soldiers only 10 showed parotid involvement. Comby* cites numerous epidemics

Op. cit., p. 119.

where orchitis without parotitis was a common occurrence. Other reports of carefully studied cases, however, tend to exclude the necessity of parotid involvement, and lead one to believe that mumps may manifest itself solely in the testicle. The following table gives an idea of the frequency of this type of mumps. I have been able to collect 64 such cases from the literature. (See Table IV.)

TABLE IV.

TESTICULAR MUMPS WITHOUT INVOLVEMENT OF THE SALIVARY GLAND.

AUTHOR	REFERENCE	NO OF CASES
Chauvin	31	1
Jourdan	32	1
Fournie	35	1
Servier	26	1
Jacob	52	3
Grasset	55	1
Sorel	56	3
Hammersley	43	6
Lauterbach	57	1
Luzzathi	58	2
Helber*	39	3
Kovacs	59	2
Aronson	60	1
Heller	61	16
Debize	Cited by 52	1
Levi	" " 59	4
Boyer	" " 1†	5
Vidal	" " 1	5
Malabouche	" " 1	4
Jobard	" " 1	2
Resiguer	" " 1	1
TOTAL		64

*The three cases cited by this author were collected from the Sanitätsberichten from 1890 to 1906.
†Comby[1] *op. cit.*, p. 119.

CLINICAL ASPECTS OF ORCHITIS.

In the majority of cases the orchitis appears about three to seven days after the height of the parotitis, but it may come on before, during, or in the third week[62] after the onset of the parotitis. It is frequently ushered in with a chill and a sharp rise of temperature, with headache and pronounced weakness. Nausea, vomiting and diarrhea may ensue, and even delirium. The patient complains of pain in the testicle which may range from a slight discomfort and sensation of heaviness to the most intense pain radiating to the thigh, inguinal, or sacroiliac region, and even into the abdomen as a shifting dull ache. The rapidity of the swelling intensifies the pain, which I have frequently heard described as "unbearable." Here the faces becomes characteristic of a most intense agony, with an anxious, staring expression, accompanied by a hectic look of the cheeks in contrast to the pallor of the rest of the face. The patient groans and appears restless, yet he hardly moves a muscle if he can help it.

In the course of one to three days the testicle may be found to be two to four times its original size, usually of a firm consistency and very sensitive to the touch. Tenderness of the glands on palpation is most marked in those cases where the patient complains of severe pain before the examination is made. The epididymis may be found to be involved, and likewise the spermatic cord, as manifested by swelling and tenderness.* A hydrocele often

*The epididymitis may precede or follow the orchitis, but more often it precedes. Several authors have remarked on the fact that the tenderness of the epididymis is not so great as when the condition is of gonorrheal origin.

develops with the epididymitis, but rarely to the degree met with in other conditions. The skin of the scrotum frequently becomes red, oedematous, and sometimes exceedingly tender to the touch. In one case gangrene of the scrotum is reported to have taken place.†

†Ravaton, 1877, cited by Schottmüller[3], *op. cit.*, p. 49.

When prostatitis is present, we may have a urethral discharge varying from an opaque to a yellowish appearance not unlike that of gonorrhea. The smears are free from organisms, and the discharge lasts only about two days.

When the temperature stays up around 104 for more than twenty-four hours, symptoms of meningismus or encephalitis may develop. In fact, delirium may come on even earlier than this and may persist for several days, particularly, as we have already remarked, if the or-

chitis accompanies a double parotitis.‡ In bilateral orchitis the second testicle usually follows the first, as I have already stated, in from three to nine days, generally between the sixth and eighth day after the first. When both testicles become affected at the same time, the constitutional symptoms are usually increased, more especially the feeling of general weakness; but the simultaneous involvement of both testicles is very rare.

‡ The case of double epididymitis and double parotitis described by Phillips, in which there was recurrent delirium, high fever, and, later, stupor, with retention of urine with each new involvement, suggests orchitis rather than merely epididymitis, particularly as he refers to Mitchell's case of orchitis as an epididymitis (Phillips, S.: "Note on a case of mumps in which attacks of epididymitis occurred on each side in turn, each attack being accompanied by symptoms profoundly involving the nervous system." Lancet, London, Jan. 7, 1911, 1, p. 23.)

The swelling of the testicle begins to go down between the third and sixth day after the onset, and has disappeared at the end of another five to seven days. In very mild cases the patient may be conscious of the condition merely by the sensation of weight in the affected testicle.

An interesting complication is orchitis in an undescended testicle. I have come across two such cases in the literature. In the first, described by Mitchell,[63] a negro, aged 33, was seized with a most intense pain in the left lower quadrant of the abdomen one week after a mumps parotitis. He was found to be in an acute delirium, and resisted attempts at examination in a maniacal fashion by striking, biting, and spitting. The left rectus was rigid and apparently tender to pressure. The left testicle was absent from the scrotum. Examination of the left inguinal canal was resisted by the patient, while no objection was made to inserting the finger in the right canal. One-half grain of morphia gave relief, and the next day the patient was found much improved. Orchitis had developed in the undescended testicle. The second case, reported by Ross,[64] was in a boy of fourteen. The patient complained of severe pain in the right inguinal region following a mumps parotitis. Examination revealed that the right testicle was retained in the inguinal canal, and manipulation caused the pain to extend into Scarpa's triangle. As there was no improvement at the end of fourteen days, the retained testicle was removed by operation, and was found to show "all the signs of acute inflammation on microscopical examination." It is a pity that the histology of this gland is not described, because it is exceedingly interesting that a retained testicle should be involved, inasmuch as testicles are usually atrophied when found in this position. We might speculate that the atrophy in this case had not preceded the arrival of puberty.

PATHOLOGY.

The pathology of acute orchitis in mumps consists of a more or less rapidly appearing serous exudate in the septa and lobules of the testis.[14] This condition spreads to the tunica vaginalis, where the tension, if suddenly exerted, gives rise to the intense pain. From here it may extend to the skin of the scrotum, giving rise to a definite redness and swelling. As already stated, the epididymis may become involved before or after the testicle, and an acute hydrocele may develop. Even the vas deferens may become congested by itself or as a part of the general inflammation of the gland.*

* The inguinal glands frequently become involved, just as cervical adenitis is apt to result from parotitis. The lymph nodes merely enlarge temporarily with more or less tenderness. Suppuration rarely follows, and if so, is the result of a secondary infection. Hladen[65] had occasion to examine sections of an inguinal gland which enlarged after a mumps orchitis. The pathological picture was similar to that found in a tubercular infection. A Gram-positive diplococcus was isolated which the author considers to be the causative factor in mumps.

Wollestein[66] injected the salivary filtrate of acute mumps cases into the testes of young cats, with the result that after an incubation period of six to seven days, an orchitis was set up, giving rise to histological changes "consisting of degeneration of the epithelium and interference with spermatogenesis." "Atrophy of the inoculated testicle occurred in several of the cats, after the acute symptoms had abated."

An excellent picture of the gross pathology is given by Smith,[67] who operated on the acute case of orchitis occurring eight days after the onset of a bilateral parotitis epidemica.

"Operation—2-inch vertical incision along anterior aspect of left scrotum. Tunica vaginalis opened with escape of about one ounce of turbid yellow fluid from which a culture was made. The testicle was delivered through the incision. It was three times the size of a normal testicle, firm and elastic on palpation. The color was more bluish than is usual, and throughout the tunica albuginea were scattered many minute reddish specks, probably punctate hemorrhages. The epididymis was definitely enlarged, soft, without induration, and of a deep red color which at the globus major became almost black. It was the picture of intense acute congestion. The cord was somewhat edematous, the vas normal . . . . "

A small piece of testicle tissue from another case of double orchitis was submitted to Dr. S. B. Wolbach,* who gives the following report on his microscopical findings of the stained sections:

* Wolbach's report included by Smith, *op. cit.*, p. 324.

"The process does not affect the testicle tissue uniformly. There are groups of seminiferous (convoluted) tubules which are completely destroyed and distended with exudate, separated by areas of normal and slightly affected tubules which contain large numbers of mitotic sexual cells, though few mature spermatozoa.

"The exudate in the destroyed tubules consists chiefly of polymorphonuclear leucocytes and phagocytic endothelial leucocytes. The cells of the tubules have mostly undergone a hyaline degeneration and are taken up by phagocytic endothelial leucocytes, though there are occasional perfectly preserved mitotic sexual cells scattered among the tightly packed exudative cells.

"The intertubular connective tissue everywhere is edematous and between the tubules most affected contains coarse, meshed fibrin, small areas of hemorrhage, and many polymorphonuclear and endothelial leucocytes.

"Among the groups of least affected tubules there are some with normal epithelium, but with lumina partly filled with polymorphonuclear and endothelial leucocytes, as if the process were spreading among the lumina.

"There are many more tubules, however, which show lesions involving a small portion of the circumference, where it appears as if the process were extending from the intertubular connective tissue. In these places numerous leucocytes are found in the act of migrating through the basement membrane of the tubules. These small lesions contain deeply staining hyaline degenerated sexual cells, hyaline fragments, polymorphonuclear leucocytes and endothelial leucocytes. The immediately adjacent epithelium is usually full of mitotic sexual cells showing the various stages of spermatogenesis.

"The tunica albuginea is edematous, and there are small hemorrhages and zones of cellular exudate about blood vessels. The cells about blood vessels are polymorphonuclear leucocytes and endothelial leucocytes.

"Mitotic endothelial cells in the lumina of capillaries occur in the tunica albuginea and intertubular connective tissue.

"Liquefaction necrosis is not present either in the tubules or in the connective structures.

"No bacteria or other parasites can be found in the sections and in film preparations made at the time of the operation. Ordinary stain, Gram's stain, and Giemsa's stain were employed."

(To be continued.)

NOTES FROM THE EAR, NOSE, AND THROAT SERVICE, PROVISIONAL BASE HOSPITAL NO. 1, BAZOILLES-SUR-MEUSE, FRANCE.

By H. H. Amsden, M.D., Concord, N. H.

The data for this paper were collected during the winter of 1918-1919, at a Base Hospital at Bazoilles-sur-Meuse, which is about seven kilometres south of Neufchateau, in the Department of the Vosges. In this section there is a very high degree of humidity during the winter months, which was especially conducive to catarrhal affections of the respiratory mucous membranes. The cases treated were chiefly those which would be seen in a civilian clinic, the only ones directly attributable to battle casualties being the chronic gas cases. Disability classification formed an important part of the medical work; observations made and deductions drawn were of the greatest interest and value, in determining the relations between lesions of the upper respiratory tract and physical fitness. The effect of climatic conditions upon these diseases was so marked that a special classification was provided for cases needing treatment in a warmer, drier climate; most of them were evacuated to Southern France.

SINUSITIS.

One of the most prevalent affections was acute catarrhal sinusitis; practically every case showed a high deviation of the septum, with consequent interference with the drainage of the sinuses. The compensatory turbinal hypertrophy which generally accompanies this condition was apparently less important as a causative factor, the sinusitis being more marked on the side of the deviation. About 75% of the deviations were to the right. Non-operative treatment by means of sprays and suction was sufficient to relieve a very large proportion temporarily, but it was found that most of them would relapse if returned to duty, and report back to the clinic in a few days with all the symptoms of headache, nasal obstruction, etc. The opportunity afforded by a very competent x-ray department to have any case radiographed when desired was of great assistance in correctly diagnosing the sinus cases.

Before being ordered to Bazoilles I was regimental surgeon for several weeks at Camp Montierchaume, in the Department of the Indre. The equipment for work here was most meagre:

not much of anything but C.C. pills and tincture of iodine. Acute affections of the respiratory tract formed a large part of the work at sick-call, and in treating acute rhinitis, sinusitis, tubo-tympanic catarrh, naso-pharyngitis, etc., instillation of 25% argyrol solution into the nostrils with a pipette or medicine dropper proved very effective, much more thorough than spraying, or swabbing the naso-pharynx through the mouth.

ACUTE SUPPURATIVE OTITIS MEDIA.

A few of these cases were primary or following acute rhinitis; more frequently they were complications of influenza, pneumonia, scarlet fever or diphtheria. In a series of fifty cases of typhoid, 20% developed O.M.S.A. In the cases occurring during convalescence or when the patient's mental condition permitted him to call attention to symptoms, pain, deafness, and local tenderness were complained of; in the acute stage of typhoid spontaneous rupture was generally the first symptom. Cessation of these complications followed daily instillation of 20% argyrol solution into the nostrils of all the typhoids. In the acute middle ears complicating acute infectious diseases, early paracentesis, followed by dry wicks or 10% phenolglycerin, was the treatment of choice. The primary cases were frequently aborted by use of 50% ichthyol-glycerin or 10% phenol-glycerin. Instillation of Dakin's solution was tried in some of the acute otitides mediae, but the results were not as satisfactory as irrigation, or phenol-glycerin, and the patients almost always complained of considerable pain following its use.

CHRONIC SUPPURATIVE OTITIS MEDIA.

The relatively large number of these cases, most of which obviously existed prior to enlistment (E. P. T. E.), demonstrates two facts: (1) the aural examination of recruits was not sufficiently thorough; (2) chronic suppurative lesions of the middle ear are of greater importance as a potential cause of disability than some other defects upon which greater stress is laid, *e.g.*, a soldier with a flat foot may be perfectly fit for active service, except marching, and be able to withstand all sorts of hardship and exposure, while the possessor of a chronic discharging ear is subject to acute exacerbations from infection and may at any time develop a mastoiditis. The usual palliative treatment produced much improvement, but like the cases of sinusitis, climatic conditions caused frequent relapses and exacerbations. A considerable number of the cases under treatment gave a history of having spent most of their time while in France in hospital or infirmary, on account of ear trouble.

CHRONIC TONSILLITIS.

These cases were of interest principally as carriers. Several cases showing positive K-L for several weeks after all clinical symptoms had disappeared were cleared up only after tonsillectomy, and the same was true of meningitis carriers. There were very few cases showing symptoms of focal infection which were attributable to diseased tonsils.

VINCENT'S ANGINA.

This disease presented three clinical types, not by any means always distinct, as many of the cases showed dental lesions, either catarrhal or ulcerative. (1) Ulcerative form; ulcers chiefly on tonsils and pillars, with sloughing, some odor and adenitis. (2) Catarrhal form; inflammation of fauces, palate and pharynx, with dysphagia and no ulceration. (3) Dental form; infection around roots of teeth, with ulceration; the most intractable, as reinfection is very frequent and dental treatment absolutely necessary. Several of these cases were treated with diarsenobenzol intravenously, but the results were not as marked as in cases in civilian practice treated with salvarsan.

The local treatment most successfully adopted was as follows: (1) cauterization of ulcers with 25% trichloracetic acid; (2) gargle four times daily with 2% acetic acid solution; (3) brush teeth four times daily, use in rotation one-half dozen tooth brushes, kept soaking in 10% potassium chlorate solution.*

A bacteriological examination of the mouths and throats of the medical staff and nurses of the hospital showed the presence of the spirillum and fusiform bacillus in all but two of the doctors and four of the nurses, none of whom showed clinical symptoms of disease.

CHRONIC LARYNGITIS.

Several cases caused by inhalation of poison gas were treated. The clinical picture was much the same in every case; redness and

* The technic for this treatment was suggested by Capt. Eller, U. S. Dental Corps.

thickening of the vocal cords, faulty approximation, stringy mucus between the cords, aphonia or dysphonia. These cases were particularly susceptible to adverse climatic conditions, and their future history as to ultimate cure, development of tuberculosis, etc., will be of great interest.

Among the rarer cases of interest were two of facial paralysis of dental origin which promptly cleared up on extraction of the offending teeth.

Owing to orders forbidding operations except of urgent necessity, and also to the very limited instrumentarium provided, many cases of chronic sinusitis, septal deviations, chronic tonsillitis, etc., which would have been operated in a civilian hospital, were evacuated untreated, after having been held for weeks in the wards; many of them would have cleared up much sooner following operative treatment. Mention may be made here of the very inadequate set of instruments provided for ear, nose, and throat work. I do not know who was responsible for their selection, but a set of this sort which does not contain a nasal snare, ring probe or curette, or a mastoid rongeur, is certainly far from complete and anyone who has ever tried to get any extras from a medical supply officer can easily imagine the difficulties to be encountered in this direction. About the only way the necessary instruments could be secured was through the Red Cross, or by direct purchase from Paris.

Physicians who pay special attention to otology and rhinology have long realized the intimate relation between certain diseases of the nose and throat, and local and systemic diseases arising therefrom; this relation has apparently not been observed to so great an extent in the standards set up by the army for the examination of recruits. Of all defects existing prior to enlistment, next to flat foot, chronic obstructive and inflammatory disorders of the ear, nose and throat were the most common cause of physical disability in the soldier. The examination of the ear, nose and throat, both by the draft boards and in the camps, was more superficial than any other part of the examination, except possibly that of the renal functions. If the recruit's hearing was up to standard, and there were no gross obstructive or inflammatory lesions present, he was passed as fit, and thereby many cases of chronic tonsillitis, otitis media, sinusitis, etc., were accepted. Under climatic and living conditions in France these were a frequent cause of physical disability unfitting the soldier for active service.

In the disability classification by the ear, nose and throat service at the Base Hospital, more cases of O. M. S. C. were given a surgeon's certificate of disability (S. C. D.) than any other class of cases. A very large per cent. of these obviously existed prior to enlistment, and were so classified, yet in claims for compensation it will be very difficult to establish this fact, and many of these cases will be awarded compensation for conditions which were doubtless made worse by military service, yet which existed prior to enlistment. Such cases should either have been classified before being accepted, and have received treatment, or have been refused as physically unfit. The adoption of more rigid standards for ear, nose and throat examinations by recruiting boards, life insurance examiners, etc., will result in the elimination of many of the physically unfit from military service and as life insurance risks.

AN IMPROVED METHOD IN THE TREATMENT OF OTITIS EXTERNA.

By Joseph Prenn, M.D., Boston.

The tube leading to the membrana tympani is the external auditory canal. It consists of two parts: a smaller one, anteriorly: the cartilaginous meatus; and a larger one, posteriorly: the osseous meatus. The entire canal is covered with skin continuous with that of the auricle and extending inward to the outer layer of the membrana tympani. This skin is strongly adherent to the perichondrium and periosteum of the canal respectively.

A simple inflammation may be set up in any part or the whole of the canal through irritation by chemicals. The infection, however, of the external auditory meatus, usually called furunculosis of the canal, takes place through the hair follicles and has its origin, as a rule, in the cartilaginous meatus, though occasionally we encounter a case which is entirely confined to some part of the osseous meatus.

Although we classify this condition as furunculosis on account of its etiology, clinically it presents a different picture and runs an entirely

different course. We very seldom see here a furuncle coming to a head, unless in the superior part of the canal where the cartilage is wanting. There is no give to the skin of the canal; it is strongly adherent.

Occasionally we meet with a cycle of infection as in other parts of the body. This is especially true in people with a furuncular diathesis. Various parts of the canal will be infected in consecutive order. Recently a case like this came under my care in a patient with furuncular diathesis whose canal went through the cycle of infection, starting with a furuncle superiorly that came to a head, and after the entire canal was healed, the tragus of the same ear became infected. As a rule, however, the infection from the start is confined either to one part or, if severe or when it has taken place in different parts simultaneously, to the entire canal.

Subjectively the patient experiences pain, which is sometimes excruciating. He feels it especially when the condyle of the lower jaws bears pressure on the external canal, as in eating. He cannot stand any pressure or traction of auricle at all, and of course cannot lie on the affected side. The patient experiences difficulty in hearing and complains of a sense of fullness and becomes irritable.

Objectively there are an infiltration and edema of varying degree to complete closure of canal. The drum membrane may become thickened and red, but not bulging, due to the extension to the outer layer of the drum membrane from the canal, and it clears up with the latter. By extension from the canal a post-auricular abscess may form in children when the infection is posteriorly, or infection of parotid through the fissures of Santorini when the infection is anteriorly. There may be a cellulitis of the neck downward.

Treatment. When the inflammation is slight, heat and medicinal applications may effect a cure. Various medicines are being used by different men, but solution aluminum subacetate properly prepared and properly and gently applied, gives very good results. When pus is present, we make deep incisions to obtain pus. Twenty-four hours after the operation, we insert a gauze strip soaked in the above solution into the canal, and the patient keeps same moist with the solution by means of a medicine dropper. The dressing is changed daily for a few days. When there is marked edema, especially when the entire canal is involved, incisions are made on all sides of the canal under general anesthesia, followed by the application of heat and in twenty-four hours by the above solution.

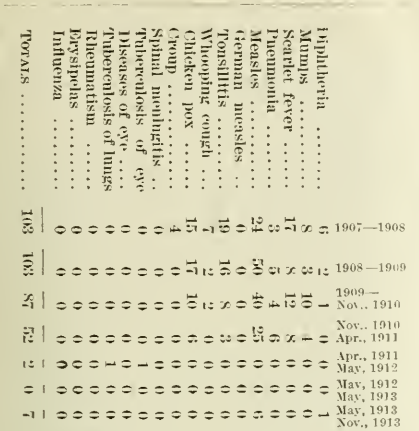
The question of the kind of heat is important. Since the patient cannot stand any pressure, the difficulty of applying different poultices and holding them there is obvious. Especially difficult is it on lying down. He cannot lie with his sick ear on the poultice, neither can he stand the poultice resting on his ear. The poultice cools off readily, and that is another disadvantage. It is certainly uncomfortable, to say the least; it retards the healing, and it adds a great deal to his already taxed nervous condition.

The writer, therefore, found the use of the electric bulbs 50-100 candle power very beneficial. The patient can sit with the sick ear turned to the lamp, or lie on his good side with the lamp lowered from a flexible or folding stand with a shade over it bent right over his sick ear, and get the benefit of a uniform heat.

INSTITUTIONAL DENTISTRY: RESULTS. REPORT NO. 4.

BY FREDERICK A. KEYES, D.M.D., BOSTON.

IN the BOSTON MEDICAL AND SURGICAL JOURNAL of July 25, 1912, I submitted my first report on institutional dental work in its relation to the infectious diseases of childhood. This report was followed by others with statistics up to 1916. These were the first statistics to definitely demonstrate the causal relationship of bad teeth to the general health of the child. Through the courtesy of the present visiting dentist, Dr. Jos. V. Lyons, and the visiting physician, Dr. N. A. Drummey, I have been able to bring the statistics of this particular institution up to date. The table includes all diseases for the 13-year period 1907-1920 at St. Vincent's Orphanage, Boston. The amount of dental work done during that time has, of course, been enormous; but to publish the various numbers of extractions, etc., would be of no scientific importance. Enough to comment that the dental work is being very carefully and effectively done. The statistics follow:



Our first statistics showed clearly the fact that the incidence of infectious diseases dropped sharply once proper care of the teeth was begun. From the table just presented it may be seen that the number of cases of infectious diseases has been some few more than in the first five years of our study. This proves what we have all felt, that even the most exacting care of the teeth will not entirely eradicate disease. We were never so Utopian as even to hope it would. Yet these statistics when compared with the infectious disease rate before dental work was seriously undertaken do, nevertheless, justify our position that diseased teeth bear a direct relationship to ill health in children. On the other hand we are just as strongly convinced that diseased teeth are not the only causal factor or even contributory factor in many systemic diseases, whether of childhood or adult life. The present day tendency to blame the teeth for all ills to which human flesh is heir is rightfully condemned in the light of careful dental investigation, and it should be but a short time before so-called oral surgeons, focal infection specialists, amateur roentgenologists and the like are consigned to "innocuous desuetude" together with the other medico-dental fads, however well intentioned. The thoughtful physician or dentist who has kept his head through this maelstrom of almost professional profiteering will continue to place the welfare of his patient above his own emolument, blaming the teeth for systemic disease only when other likely sources, such as tonsils, sinuses, adenoids, etc., have been eliminated.

The pendulum of focal infection has swung too far. We must, however, be on the watch lest the same radicals who pushed it too far forward become ultra-conservative in allowing it to swing too far in the other direction. Much damage has been done and will be done to professional advancement by this cult. We know too many unfortunates at present wearing artificial dentures who still suffer from the same symptoms and diseases which were to have been at least relieved by the wholesale dental extraction of which they were the subjects. The remedy is plain; there should be more genuine coöperation. The diagnoses of arthritis, myositis, neuritis, pericarditis and all the other "itises" should be made by those competent in internal medicine to do so, not by self-styled oral surgeons and arthritis specialists. Likewise should the field of dental diagnosis be left to the dentist. Then let there be consultation!

To extract teeth for diseases on which the most recent medical research is unable to shed light is at least unscientific. But to deny the importance of the teeth as sometimes the sole and often the complementary focus of infection is equally indefensive. It is hoped that the publication of the above statistics showing the improved condition of the children of St. Vincent's Orphanage may lead to a saner view of the whole question.

We believe that care of the mouth and teeth is a necessary prophylactic measure to protect a patient's resistance, and that the teeth may frequently be the sole cause of systemic disease; but we are just as firm in the belief that the teeth should never be sacrificed until it has been definitely established by consultation that other and more important foci of infection are not present

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Keyes, Frederick A.: Institutional Dentistry: Methods: Results. Boston Medical and Surgical Journal, June 25, 1912; *Ibid.*, Jan. 15, 1914

Keyes, Frederick A.: School Dentistry. Dental Cosmos, June, 1915.

VINCENT'S ANGINA—STOMATITIS.

By JOHN E. GANLEY, D.D.S., BROCKTON, MASS.,
Attending Dental Surgeon, Brockton Hospital.

ACUTE ulcerative inflammation of mucous membrane of mouth and contiguous parts, *i.e.*, cheek, tongue, palate, tonsils, pharynx, gingiva, and lips.

The direct cause is ascribed to Vincent's fusiform bacillus, associated with Vincent's spirochetes. The various modes of infection are promiscuous kissing, drinking from taps on Lyster bag by directly applying the mouth to tap, unsterile drinking cups and glasses, drinking from comrade's canteen or cup, insufficient sterilization of mess kits in wash water provided for the same, inability to perform proper mouth hygiene due to environment, as life in trenches and in the field.

The contributing causes: the soldiers in the trenches or in the field are unable to care for the mouth and teeth properly, food remnants being retained in the interproximal spaces of the teeth. The most active lesions are found around defective dental work, namely, defective bridge work, crowns and fillings, malerupted and impacted wisdom teeth.

There are many types simulating syphilis with herpes labialis. The character of the lesion in Vincent's has irregular shaped margins, bleeds readily on pressure, has tendency to granulate or "scab" over; lesions are multiform. In syphilis characteristic single sore, not painful, has an indurated base and more pronounced.

The methods of diagnosis—Smears from gingival margins, cheeks, tonsils, lips, palate, etc. Stain—Carbo-fuchsin strong, three minutes, washed off with alcohol, then ready for examination: appears under a microscope a cigar-shaped bacillus, sometimes striated, sometimes non-striated; spirochetes are slender organisms consisting of six, eight, or ten spirals, almost invariably with bacillus. In cases where the lesions are located in the posterior portion of the mouth it is well to "take the blood" for one or several Wassermanns as a great many lesions closely resemble those of syphilis.

TYPES AND TREATMENT OF SAME.

Type I. Symptoms—Headache, foul breath, sore throat, anorexia and lassitude. Heavy, scummy deposits or films on gingiva. Saliva is very ropy, teeth and palate tender to pressure, and sensitive to heat and cold. Obscure cases some herpes labialis but not frequent. Impaired sense of taste both to foods and cigars, cigarettes or pipe: patient, if a smoker, does not care to smoke.

Treatment Type I case: Dry off areas with cotton pellets. Apply 7% chromic acid and follow immediately with tincture benzoin compound. *Apply both profusely*, using separate dressing pliers for each agent; repeat treatment twice same day if possible.

Second day: General prophylaxis is given, removing all calculus, all stains and deposits. Allow gums to bleed profusely. Rinse mouth with warm normal saline solution. Treat with 7% chromic acid and tincture benzoin compound twice this day.

Third day: In the morning massage gums with 15% solution argyrol, with vigorous massage, inducing hyperemia; afternoon, chromic acid and tincture benzoin compound.

Fourth day and thereon: Spray mouth with copper sulphate 2% until gums heal and a negative slide is procured.

Type II: Headache, sore throat, anorexia, lassitude, gingiva, somewhat hyperaemic, bleeds readily, palate and gingiva very sensitive to hot and cold drinks and food, gingiva and palate present characteristic bluish tinge.

Treatment: First day administer a cathartic, preferably castor oil. Perform general prophylaxis, removing all calculus, stains and deposits with pointed orange wood sticks, work 5% phenol or 5% $AgNO_3$ in pockets and interproximal spaces under free margin of gum. In the afternoon of same day apply chromic acid 7%, follow immediately with compound tincture benzoin.

Second day: Apply chromic acid 7% and benzoin compound A.M. and P.M.

Third day: Copper sulphate 2%—spray mouth. Continue daily until negative slide is obtained.

Type III: Usually found in a fairly healthy mouth. Patient as a rule practises some mouth hygiene, gums very hyperemic, bleed easily; palate very sensitive to heat and cold. *Prophylaxis contraindicated.*

First day: Apply chromic acid 7% and tincture benzoin compound A.M. and P.M. until soreness is relieved, and then give general prophylaxis. Spray mouth with normal saline solution. Spray mouth with copper sulphate daily until lesions heal and a negative slide is procured.

Type IV: Lesions in definite localized area. Patient complains of soreness in region or area. Usually quite a healthy mouth.

First day: Apply chromic acid 7%. Follow with compound tincture benzoin to gingiva and palate complete.

Second day: General prophylaxis. Swab mouth complete chromic acid 7% and follow with compound tincture benzoin.

Third day: Remove stains of chromic acid and tincture benzoin compound and administer daily vigorous massage with finger cot 15% argyrol until negative slide is procured.

CONCLUSION.

Many patients present hypertrophied tonsils with large crypts. After mouth has cleaned up tonsils should be removed; if not, there is liability of recurrence, as it is almost impossible to destroy organisms remaining in crypts in tonsils.

Vincent's angina: Ludwig's angina: Differential diagnosis in floor of mouth. Cellulitis in neck in Vincent's and not in floor of mouth; also smears for Vincent's and streptococci. Temperature more marked in Ludwig's 103°-104°.

In the management of hundreds of cases, both in the Army at Camp Hospital No. 26, St. Aignau, France, and in civilian practice, if the cases are classed according to types and treated as such, *i.e.*, according to type, a negative slide can be procured and a clean, healthy mouth presented in four to seven days. One must have the hearty coöperation of patient in abstinence from alcohol and tobacco during treatment. I believe this treatment to be far more efficacious than methylene blue, diarsenol, arsphenamine, Fowler's solution; not poisonous in any degree, with mercuric cyanide, I find the only other medicament of merit being a solution of diarsenol in ampules put up by Health Laboratory in Philadelphia, and the use of same suggested by Dr. M. T. Barrett of University of Pennsylvania.

Society Report.

MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.*

TUBERCULOSIS AND WEAK BACK.

Meeting held at Hotel Brunswick April 15, 1920. Dr. Douglas Graham presided. Twenty-four were present.

* Reported by Mr. Thomas Burns of Caines Institute.

Prof Edward O. Otis was the first speaker. Dr. Otis, in his talk on tuberculosis, briefly reviewed the history of the disease. He mentioned the finding of the tubercular infection in the spine of a very old Egyptian skeleton. In the second century Galen described findings which are now recognized as having a relation to tuberculosis. Nothing further of note is recorded until the time of the so-called anatomic period, when dissection became established as a part of medical science. The tubercle was then noted as an abnormality in the form of an inflammatory lesion. Linnet proclaimed that all forms of tuberculosis were from a single type of infection. In 1865 Velmar proved the disease to be communicable. Case of eye infection in a French hospital proved to be tubercular. About this time bacteriology was being placed on a scientific basis and through this form of research the bacillus was shown to be existent. In 1882 reports on the subject were handed to the medical societies. Koch made important contributions to the work of combating this disease, produced a glycerin extract from cultures of the tubercle bacillus,—Koch's lymph. Smith, investigator of the bovine type of the bacillus showed that this type was never transformed into the human type. The bovine bacillus affects children, but not adults. In a series of experiments it was found that 10 per cent. of the child subjects had been infected with the bovine bacillus. Children seldom have infection of the lungs; it is confined mostly to the bones. Infants die from lack of resistance, glandular infection involvement. Various attempts have been made to produce a preventative of infection with but little results as long as the efforts were directed against the infection itself. The warnings issued from various sources were responsible for a special kind of phobia and served no useful purpose. Autopsies showed 90 per cent. infectious evidence in children and adults; not evidence of an active infectious process but proof of the individual's having received the infection at some time. Immunity in adults is gained through early association successfully combated. The tubercular individual is dangerous only to children who have not had their infection. An English doctor put forth a suggestion that it would be well to feed all children with a sufficient amount of the bacteria to guard against haphazard infection and to produce an early im-

munity. One form of the disease is in the nature of a chronic catarrh of the lungs. The secondary fibroid form is really an activated old infection. The work of fighting the disease today is not only directed against the infection itself, but is for the production of a better understanding of the principles of hygiene and sanitation and the raising of the physical standards of the people as a whole. The question of climate is of minor importance as all climates produce their quota of tubercular individuals. In the treatment of the disease, rest is of primary importance, and whatever exercise is allowed should be carefully checked as to the type and duration.

Massage is of great benefit as a stimulant of circulation and nutrition, either as an adjunct or as a substitute for exercise. During the last five years great advances have been made in the treatment of these cases. Italian and German surgeons first popularized the artificial pneumothorax. If the disease is confined to one lung the pleural cavity is filled with nitrogen gas and refills kept up as long as for two years. Case on record of a man in Pavia riding bicycle to hospital to get his treatment by gas infection. Occupational therapy has been established in Mattapan Hospital and other institutions and has proven of great benefit, mentally and physically, to those patients so governed. American Indian adults suffer far more than white adults from the effects of this infection, the reason for this difference being that the former do not so frequently get childhood infection and the supposed immunity following.

Dr. Graham, in thanking Dr. Otis for his very instructive talk mentioned a few personal experiences; one a patient 82 years of age, president of a large insurance company, who said that when he was 28 years old he was given over to die of consumption. His office chair was situated so that he dared not spit, so he had to swallow his spit and in this way manufactured his own antitoxin and cured himself. His thoughts were somewhat in advance of modern progress.

Dr. Otis said that he had no fear of infection through close contact with tubercular patients. His long years of service in this work had convinced him of there being little or no danger.

The second speaker, Dr. H. W. Marshall of Boston, orthopedic surgeon and investigator, spoke on the mechanical arrangements of lower regions of backs and the treatment of their weaknesses. Dr. Marshall exhibited a skeleton for the illustration of his subject and also presented to each person present a drawing of his own making for reference in the explanation of points which have been but poorly described in written material on this subject. Dr. Marshall is the inventor of a number of braces designed for use in the various types of abnormal back conditions. Photographs of these braces were shown. Dr. Marshall is about to present his views on the subject to the medical journals and the article will be obtainable in booklet form. This report is not a complete record of Dr. Marshall's talk. The details of the subject will be more satisfactorily appreciated on reading his own published article.

Dr. Marshall spoke of the vertebrae as spools held in normal alignment during rest and action by the normal function of the ligaments and muscles attached to the vertebrae, and to the bony structures whose movements affect the position of the vertebrae. The malposition of bony parts is, then, a result of improper functioning of their controlling nerve, muscular and ligamentous tissues and not *vice versa* as a certain group would have it. In speaking of slips and dislocations some orthopedists have stressed more the bony arrangements than the action of muscle and ligament on the bony arrangements. The question of referring to the nervous function of the part as affecting muscle-action was introduced by Dr. Graham. Dr. Marshall assented to the importance of this point but thought it better to confine the discussion to the more easily visualized mechanics of the parts affected. Dr. Marshall demonstrated the tendency of the body's weight to push the sacrum down and the same influence tending to tilt the pelvis. The anatomy of the sacroiliac joint was described with special reference to the function of the greater and lesser sacroiliac ligaments. It was demonstrated that the usual type of strap applied for relief of sacroiliac strain whilst being efficient in holding the joint to some extent within normal corrective position, the same strap does not prevent the tendency of the sacrum to tilt forward when weakness of the back muscles is involved. Strain of the muscles in the lower back may be confused with a true sacroiliac luxation. In any of these conditions, Dr. Marshall thinks

that the back should be given some artificial support. A back strain may involve some tearing of connective tissue with hemorrhage or edema. Together with structural injuries there exists the possibility of there being an infectious process going on, having its focus in the teeth and other seats. Deficient nutrition from any cause has also to be considered. Massage may increase the toxic processes through increasing blood supply. The treatment includes support, elimination of toxemia, massage at the best indicated times, regulation of diet and general activities. The talk was highly instructive, scientific, and stimulating to the interests of the audience. A hearty vote of thanks was accorded to Dr. Marshall by all present.

Book Reviews.

The Diagnosis and Treatment of Heart Disease. By E. M. Brockbank, M.D., F.R.C.P. Fourth Edition. New York: Paul B. Hoeber. 1919.

The appearance of the fourth edition of "The Diagnosis and Treatment of Heart Disease," two editions of which have been called for within the past two years, gives evidence of the value of the book to the profession. The fourth edition includes emendations and additions made after a further experience with the difficulties met by students in mastering the clinical investigation of heart disease. A rearrangement of some of the details of the subject matter has simplified the text. As in previous editions, the author has discussed the elements of cardiac auscultation clearly and comprehensively. In the first chapter are presented preliminary considerations of anatomy and physiology. A chapter describing routine examinations and the complaints of patients is helpful in making cardiac diagnosis. Among the subjects considered in the book are heart sounds and murmurs, areas of audibility of heart murmurs, conduction and transmission of murmurs, special characteristics of the different valvular murmurs, general physical signs and symptoms of heart disease, haemic murmurs, exocardial sounds, septic endocarditis, pericarditis and angina pectoris, and cardiac irregularity resulting from disturbances of stimulation. Of particular interest and importance is the author's presentation of the subject of the treatment of cardiac disease, both before and after the development of muscle failure. The book is illustrated by diagrams and charts, and will receive from students and practitioners alike the appreciation accorded preceding editions.

Idealism of the French People. By Louise Seymour Houghton. Boston: Richard G. Badger. 1918.

The recent war has been not the source of the idealism of the French people, but the opportunity for the culminating expression of a spirit which reverts to the age of the Druids. This little volume portrays with remarkable sympathy and insight the characteristics of the French people. The stern sacrifices of the Druid, the spiritual purpose animating the Crusades, the ideals impersonated by Joan of Arc, the wars of Religion, and the French Revolution all express the idealism which has guided France throughout the centuries. This book presents many examples of the noble aspiration which has been the underlying principle of the political, religious, and social struggles of France. Her sons have sacrificed themselves cheerfully in the present war in order to maintain their heritage of devotion to the cause of idealism. *The Idealism of the French People* is a book of unusual interest; it expresses a spirit which will be an inspiration to everyone who reads it.

Gynecology and Obstetrics. The Practical Medicine Series, Volume V. Edited by Charles L. Mix, A.M., M.D. Chicago: The Year Book Publishers. 1918.

Gynaecology and Obstetrics is the fifth volume of a series of eight included in *The Practical Medicine Series.* This series covers the entire field of medicine and surgery, and is published primarily for the general practitioner, but it is so arranged in several volumes that it is possible for those interested in special subjects to secure only the parts they may desire. Volume V is a complete review of the subjects of gynaecology and obstetrics for the year preceding its publication. Part I considers the general principles of gynaecology, and the special problems of menstruation, the ovary, displacements and injuries, infections and allied disorders, malformations and tumors, and sterility. Part II deals with the physiology and anatomy, the hygiene, diagnosis and pathology of pregnancy; with the problems relative to labor and the puerperium; and with the diseases and accidents affecting new-born infants. This volume covers its subject thoroughly and is of unusual practical value.

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BOSTON MEDICAL AND SURGICAL JOURNAL

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ANTERIOR POLIOMYELITIS.

IN view of the number of cases of anterior poliomyelitis which have been reported recently to the Boston Health Department, the attention of physicians is called to the fact that expert consulting service is available for physicians who may desire assistance in expediting early diagnosis of cases presenting symptoms of infantile paralysis. The Health Department has emphasized the importance of early diagnosis of such cases in order that such precautions as are customarily recommended with respect to isolation can be initiated at the earliest possible moment and in order that such treatment as may be deemed best to promote the welfare of sufferers from this disease can be begun without delay.

In order to obtain the services of a consulting expert in the service of the Boston Health Department application should be made to the Health Department in person or by telephone. The office is open for this purpose from 9 o'clock A.M. until 10 o'clock P.M., every day except Sundays and holidays, when the office is open only from 10 o'clock A.M. until 10 o'clock P.M. Applications for consultation service may be made in person at the Health Department, City Hall Annex, between the hours of 9 A.M. and 10 P.M. daily, except on Sundays and holidays , on which days the office opens at 10 A.M. Applications may be made by telephone between the hours above named, by calling Fort Hill 5100 and asking for the Health Department, Medical Division, except that after 1 P.M., Saturdays, and on Sundays and holidays, Main 3887 should be called.

The clinic of the Harvard Infantile Paralysis Commission also is available for advice and assistance with respect to the treatment and especially the after care of patients who are suffering or have recently suffered from infantile paralysis. The clinic is conducted in the Children's Hospital, 300 Longwood avenue, at 10 A.M., on Tuesday, Thursday and Saturday mornings. The clinic has facilities whereby patients who cannot otherwise be conveniently transported to the clinic may be safely removed thither and returned to their homes in a conveyance under the direction of the clinic.

Unless financial aid is given immediately by the public, however, the Commission will be forced to abandon its work not only in the treatment of more than one thousand children crippled in the epidemic of 1916, but also in the care of those who may be left incapacitated by the present increased prevalence of paralysis. The following statement issued by the Harvard Infantile Paralysis Commission gives authoritative confirmation of the seriousness of the situation:

"There is an increased prevalence of infantile paralysis at present throughout eastern Massachusetts. The Harvard Infantile Paralysis Commission is acting as the agent of the State Department of Public Health upon the request of the department in the early diagnosis of the disease. It is coöperating also with the city of Boston Department of Health. The State and the city are furnishing the funds necessary to pay for expert diagnosis of the disease.

"Money is needed immediately, however, to provide the after-care treatment designed to restore strength to the muscles left paralyzed. The State and city departments of health have available funds to spend upon prevention, but the use of public funds by these departments has never been authorized for after-care treat-

ment of such cases. Financial assistance, however, has been furnished the Commission by various city boards of health and city councils when local clinics were found necessary.

"Since 1916 the Commission has been supplying regular treatment to more than 1000 children crippled in the epidemic of that year. This after-care has been supported entirely by public subscription, with the exception of the assistance given for local clinics above mentioned. If further funds are not received by October 1 not only will there be no provision for affording the proper after-care treatment for the new group of children afflicted with the disease, but the work of caring for the 1000 patients still undergoing treatment will have to be discontinued.

"All money received will be used for the treatment of the children. There is no overhead expense, and the members of the Commission give their services without compensation. Checks should be sent to Kidder, Peabody & Co., 115 Devonshire street, Boston, and made payable to the Harvard Infantile Paralysis Commission Fund."

Under the ten thousand dollar emergency appropriation authorized by the city council for use in combating infantile paralysis, Dr. S. A. Levine of Boston has been appointed expert diagnostician in the Health Department for a period not to exceed three months An appointment has been given also to Dr. Wolfert G. Webber of Brookline, who will be in the service of the Health Department for three months as epidemiologist.

The State Department of Health has established a clinic, to be under the direction of Dr. Arthur B. Lyon, for the purpose of aiding Massachusetts physicians in making an early diagnosis of doubtful or suspicious cases of anterior poliomyelitis. Physicians desiring the services of the clinic are requested to communicate with the following district health officers:

1—Dr. C. W. Milliken, 411 Book Store Building, New Bedford.
2—Dr. C. T. O'Donnell, Room 546 State House.
3—Dr. Lyman A. Jones, Willey House, Swampscott.
4—Dr. C. E. Simpson, 100 Holyrood avenue, Lowell.
5—Dr. F. A. Finnegan, 614 Park Building, Worcester.
6—Temporarily in charge of Miss Mary E. Ayer, 289 Main Street, Springfield.
7—Dr. O. A. Dudley, Waite Building, Pittsfield.

During the month of August, fifty-six cases of anterior poliomyelitis were reported to the Boston Health Department. During the first half of September, there were reported one hundred and ninety-four cases. Thus far the disease has gained greater headway than during any year since the epidemic of 1916. Physicians are strongly urged to avail themselves of the services of the clinic and consulting service which has been organized to prevent as far as possible the spread of the disease.

MEDICAL NOTES.

Award of the Médaille de la Reconnaissance Française.—The Médaille de la Reconnaissance Française has been awarded to Dr. Noel Bardswell, medical advisor to the London Insurance Committee, in recognition of the services rendered by him in Paris in connection with the treatment of tuberculous French soldiers and the establishment of an agricultural training colony at Épinay.

Dr. Jessie Macgregor Prize.—Miss Lucy Davis Cripps has been awarded the Dr. Jessie Macgregor prize of the Royal College of Physicians, Edinburgh, for her work on tetryl.

Appointment of Dr. C. Lee Shilliday.—Dr. C. Lee Shilliday, professor of anatomy and histology in the college of dentistry, University of Tennessee, has been appointed professor of biology in the Pennsylvania College of Gettysburg. Dr. Shilliday will succeed Dr. George Stahley.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending September 25, 1920, the number of deaths reported was 173 against 178 last year, with a rate of *12.06 against 11.66 last year. There were 42 deaths under one year of age against 35 last year.

The number of cases of principal reportable diseases were: Diphtheria, 32; scarlet fever, 16; measles, 5; whooping cough, 19; typhoid fever, 7; tuberculosis, 34.

Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 2; typhoid fever, 2; tuberculosis, 7.

Total deaths from these diseases were: Diphtheria, 1; whooping cough, 2; tuberculosis, 10.

Included in the above were the following cases of non-residents: Tuberculosis, 2.

Infantile paralysis cases, 30; infantile paralysis deaths, 4.

*1920 Federal census.

WORCESTER CITY HOSPITAL.—The detailed report of the Worcester City Hospital for the year ending November 30, 1919, shows that notwithstanding the soaring prices and the necessity of increasing wages they have made important changes for the betterment of service for the patients and extensive additions to the laboratory and wards.

Several prominent physicians have been appointed to the staff with the expectation of securing better coördination of all the scientific work of the hospital.

Much valuable work has been done by the various departments under the supervision of the skillful instructors with the help of the new equipment.

The Worcester Training School for Nurses offers a three years' course of regular hospital training with the addition of kindergarten methods better to qualify a nurse to care for and entertain crippled and convalescent children.

The entire report shows a creditable work accomplished.

CARNEY HOSPITAL APPOINTMENT.—Dr. James Francis Brady of Boston, has recently been placed in charge of the Dermatological Department of the Carney Hospital, South Boston.

Correspondence.

THE HEMOSTAT IN TONSIL OPERATIONS.

Mr. Editor:

It was interesting to read "A Hemostatic Forceps for Post-Operative Tonsillectomy," which was published in your issue of July 22nd. The author urges his device as a means of stopping hemorrhage by applying the clip with his Hemostatic Forceps direct to the bleeding point.

Those atypical arteries which we encounter occasionally, through no fault of ours, and the large veins that are severed, especially in grown-ups with chronic tonsillitis and in cases of previous peritonsillar abscesses, certainly need immediate attention. The field ought to be left by the operator in a state of full satisfaction and safety.

In December 27, 1917, of your issue in the article, "The Use of the Hemostat in Tonsil Operation," we have pointed out how a hemostat about five or six inches long and pointed at the end, when applied to the bleeding point will check tonsillar hemorrhage, aiding the natural forces of the superior constrictor and snare to cause hemostasis at the time of the operation. The writer, and no doubt others also, has used this method with very gratifying results, and did not have to resort so far to suturing the vessel even in a few cases of arterial bleeding. It would be interesting and instructive to hear from other colleagues their experience with the hemostat in tonsil operations.

JOSEPH PENN, M.D.,
536 Commonwealth Ave., Boston.

DR. CALLAHAN'S "LAWS OF THE HEARING CENTERS."

Peabody College for Teachers,
Nashville, Tenn., September 13, 1920.

Mr. Editor:

The applications of his so-called laws of the hearing centers which Dr. J. F. Callahan makes to the detection of malingerers feigning deafness in one ear, is not only interesting but quite inexplicable to the unsophisticated.* The explanations of the phenomena are, however, so faulty as to need attention. His law is stated in our last reference as follows: "Stimuli which are similar in all their properties except in intensity are not dissociated by the mind, and only the stimulus which is of the greater intensity is registered in the brain so that we are conscious of it." We are told that this law "is not a law of auditory responses alone, but applies to all responses of stimuli *which follow this law*,"† which would seem to follow as a matter of course; but no convincing cases are given to uphold the "law." Leaving out of consideration, however, other senses than that of hearing we must note that even here the law must be taken with some reservations.

More careful controls in the experiments described by Dr. Callahan would readily reveal difficulties that would be unanswerable on his views. It would be found, that under certain conditions the sound *would* be located on the side of the head, or in the ear, receiving the wave of lesser intensity. It is well known to those acquainted with the literature of sound localization that we have unconsciously learned to locate sounds on the basis of three different factors, at least: differences in intensity of the wave in the two ears, differences in complexity, or in the relative intensity of partials, and differences in phase of the physical vibrations. None of these factors can be singled out consciously and brought into the explicit awareness of even an experienced subject: one hears the sound as already located, as being "there": one does not hear the differences in the sounds in the two ears, and then consciously or reflectively locate the source of the sound. Intensity differences are, of course, most important: hence the practical workability of Dr. Callahan's experiments and methods.‡ Under certain conditions, however, when the phase-of-the-wave factor becomes most important in localization—when the phase differences in the two ears, the pitch of the tone, and the intensity are just right for such results—these methods might go against a perfectly honest and keenly observant subject. This unfortunate outcome cannot occur with the use of high tones, because in the case of high tones the wave lengths are so short as to make the phase-difference factor in localization inconstant in its significance.

Just as we have unconsciously learned by our active experiences that a stimulus on the upper part of the retinae means an object at our feet, that a stimulus on the right side of the retinae means an object at the left, etc., so we have also learned to "hear" a sounding object on the right when the sound waves from it come to the right ear with slightly greater intensity than they have in the left ear, or when (in the case of low-pitched tones) the waves come to the right ear with a slightly earlier phase than that with which they reach the left ear. The difference for the various senses lies, however, in the fact that in the case of sound we cannot *di-*

* Laws of the Hearing Centers and the Application of these Laws, *The Laryngoscope*, September, 1919, pp. 3-20; Concensual Reaction in the Centers, *Ibid.*, *October*, 1919, pp. 3-12; Hearing Test to Detect Malingering, BOSTON MEDICAL AND SURGICAL JOURNAL, 1918, Vol. clxxix, pp. 236-239; and Hearing Test with Voice to Detect Malingering, *Ibid.*, pp. 423-425.

† The italics are ours.

‡ I have cited some of the most important experiments on phase differences in localization of sound in my article, The Nature and Probable Origin of Binaural Beats, *Psychol Rev.*, 1919, Vol xxiii, pp. 333-351.

really experience these differences in stimulation as we can do, when our attention is called to it, the binocultr differtnces in visual perception. It is this impossibility of direct awareness of the auditory factors of localization that makes possible such use of experiments on localization as Dr. Callahan makes. It should be added that the danger of proving guilty of deception a perfectly innocent subject by the method under consideration disappears, so far as phase differences are concerned, when the human voice is used as stimulus, because the complexity of partial vibrations renders the phase-difference factor insignificant. JOSEPH PETERSON.

MATERNAL OBSTETRIC MORTALITY.

Wakefield, Mass, September 20, 1920.

Mr. Editor:

It is exceedingly unfortunate that the MEDICAL AND SURGICAL JOURNAL, which is the semi-official organ of the Massachusetts Medical Society, should have "laid before the medical profession" statistics, which seemed to the JOURNAL an "indictment of the whole medical profession." The JOURNAL is to be congratulated that it had the courage promptly and emphatically to show in the next issue on September 16th that the statistics were unreliable and unjust. The prompt repudiation will not, however, prevent the figures being quoted far and wide.

It is surprising that the maternal obstetric mortality for the whole state is at all comparable with that of the Boston Lying-In Hospital Out-Patient Department now that the JOURNAL and Dr. Malone have shown that the Out-Patient Department statistics include only normal cases, other cases being sent into the Hospital proper. The finger of scorn might as well have been pointed at the highly skilled staff of the Hospital because their statistics are higher than those of the second and third year students in the Out-Patient Department.

The JOURNAL has not yet shown why the statistics for the whole state have nearly doubled since 1901. During this period, medical training has improved greatly; good nursing has become general; hospitals are more frequent and have excellent maternity wards; rapid transportation of physicians, nurses, and patients has become possible by the formerly unknown automobile and by smooth roads; telephones are everywhere; pituitrin has made instrumental deliveries much less common; and surgical cleanliness, practically in its infancy in 1901, has become almost universally recognized and used by the profession. Physicians are probably as faithful as ever to their patients' welfare.

The above factors should have diminished mortality, but the figures would seem to show that it has nearly or quite doubled. If it is true, then there must be other glaring causes. No such causes occur to me, nor to those with whom I have talked, nor do I believe they exist.

Is not the high rate due somewhat to the more accurate recording of statistics? Until 1911 death certificates did not include instructions to record puerperal complications. Is it not also probable that death occurring in the earlier months of pregnancy are now more generally included in the records?

The JOURNAL has unwittingly spread broadcast harmful misinformation. Can it not now champion the medical educators, the physicians, the hospital staffs, and all other forces that have been doing so much for the prospective mother, so that, in maternity work, the laity and the outside world may still rightly "have faith in Massachusetts" and her physicians?

Yours very truly,
RICHARD DUTTON, M.D.

ARMY AND NAVY MEDICAL SERVICE.

Washington, D. C., September 16, 1920.

Mr. Editor:

Dr. Hugh Cabot, speaking before the Massachusetts Medical Society, June 9, 1920, on the subject of compulsory health insurance, takes a needless fling at the medical service of the armies and navies of the world when he says of state medicine: "At best such a service would be comparable to that now existing in the medical establishments of armies and navies the world over and in this form it is notorious that lack of inspiration and degeneration more or less inevitably follow."

We admit very frankly that there are serious faults in the medical men of the armies and navies of the world and that there is room for great improvement in the character of the service we render to our patients. There are inherent in the unalterable conditions of our very life many serious and some insurmountable obstacles to the most efficient service, one being the difficulty of securing for the medical corps of the Army and Navy the proper type of man. Remarks like the one quoted do not help us in this particular. We beg to submit that the handling by the state of the medical needs of the entire civil population on the one hand and the administration on the other hand of the corresponding requirements of a relatively smaller number of male adults under strict military control are such essentially different matters that to compare them can scarcely furnish illuminating or logical deductions in regard to compulsory health insurance. The reference to the government services seems to us needless and therefore peculiarly offensive.

To such readers as have the leisure and the disposition to look below the surface and challenge, in their minds at least, the sweeping condemnations made by facile speakers too high up in the medical hierarchy to be called to account we suggest the mass of evidence furnished by medical history controverting Dr. Cabot's defamatory allusion. Was there time and space we would begin the investigation at the time of that conceited civilian who evaded his imperial master's summons to military service on the ground of a more important mission. His call was to reform medicine and though he achieved a reputation second only to that of Hippocrates posterity has decided that in spite of his brilliant discoveries and unquestioned talent his influence frustrated for a thousand years the progress of scientific medicine. To cite Beaumont and the elder Borgognoni; Paré, Pringle and Pirogoff; Lind, Larrey and Laveran; Clowes and Corvisart is to mention but a few of the military and naval men and government servants who achieved distinction by their contributions to the progress of medicine in its various subdivisions and to the betterment of living conditions. Equally large is the list of those who have gone to their graves unhonored and unsung, unknown to fame through conspicuous success or failure, but for whom there beamed fires of affection and trust in the hearts of their equally nameless contemporaries. Largest of all is the category of those who began their careers in government service, or entered it later, for what profit of experience it offered but could not or would not endure its asperities and disappointments for life.

The pioneer part played by naval medical men in the development of venereal prophylaxis in this country, their accomplishments in hygiene and sanitation, their contribution to the health education of the American people through the practices inculcated on successive thousands of enlisted men passing through their hands; the suppression of typhoid fever by miliary medical endeavor in India, Africa, America and Europe; the brilliant success of the Army in elucidating the obscurities of yellow fever prevention and the joint work of medical men of the Army and Navy under Gorgas in making possible

the construction of the Panama Canal—these are but a few illustrations of military and naval achievements that give the lie to Dr. Cabot's generalization.

Had Dr. Cabot seen fit in carefully selected words to refer to the well recognized perils that beset the path of the government physician and at the same time explained that at least in the case of soldiers and sailors free medical attention from government-paid physicians is a necessity whereas in civil life the assumption of medical obligations by the government is not a necessity and would be fraught with even greater menace no exception could have been take to his utterance. Unfortunately he did not see fit to do so.

We have great difficulty in securing good men for the service and when we get them, as we do in spite of limited emoluments and scant opportunity for many of the rewards without which the civilian will not work, it is because there are still to be found young men in whom there beams a spark of enthusiasm, who have in their sense of duty, in their high concepts of their calling an inspiration not begotten of purely personal ambition. When men of prominence and attainment like Cabot speak in the tone of the address referred to they discourage good men from entering the services and so contribute directly to accentuating the regrettable features they decry. Dr. Cabot could have said with equally telling effect, so far as his main argument was concerned, that while there are many unsatisfactory details in the life and career of the medical man in the Army and Navy, we are under the obligation to care for the health of the soldier and sailor and that the career of military and naval medicine while pecuniarily unattractive offers full scope for honest and worthy effort towards the uplift of mankind and the advancement of science (*cf.*, hygiene, sanitation, tropical medicine, etc., etc.), whereas compulsory health insurance involves a paternalism like that which contributed to the downfall of the Roman Empire.

So long as our leading medical men in civil life hold up to derision the humble but earnest efforts of medical men of the services and indulge in defaming utterances about them, how can they expect these services to attain the ideal standards they inferentially demand for them?

It is not unpatriotic to recognize the faults of government and to advertise them by public discussion if the critic at the same time has remedial measures to suggest and is doing his part to counteract the evils he decries. Loose, self-contradictory statements, unqualified invective and sweeping, superficial comments of a spirit of sympathy and helpfulness we shall always be grateful for; but the parenthetical innuendo and the casual sneer are unworthy of the upright citizen of low degree and constitute real disloyalty in those whose prominence in public life assures ready popular acceptance for the most specious and illtimed comment.

Dr. Cabot begins his address with a mildly deprecatory allusion to the shortcomings of the profession as a whole. "It has perhaps been a weakness of the medical profession that it has not sufficiently exerted its great potential influence in directing or influencing the changes in the relation of medical practice and medical custom of the community. We have on the whole been too apt to regard such things as other people's business and have held the view that the care and management of the sick constituted our whole relation to the community." This is very gentle language. The fact is that the profession as a whole has deliberately and flagrantly neglected its civic responsibilities in a manner to deserve the most energetic castigation. Had Dr. Cabot reflected, when he spoke with so much greater incisiveness about members of the government services, on the work done by them, in and for the community and the state, through painstaking, persistent health education of enlisted men who at the end of their service with the colors go home to become disseminators of health information and living examples of health practices? To carry on a continuous anti-smallpox campaign, to teach personal hygiene, to toil in a hot stuffy cabin over the preparation of official returns is laborious, but it is constructive work. For years insurance companies and writers of medical books in search of substantiating figures have been eager to secure as fast as they appeared the vital statistics thus laboriously prepared while a few public spirited physicians have tried in vain to coax and cajole the physicians of the country to do their part in reporting births and deaths and in standing up for health measures in town and country, regardless of vested interests and personal profit.

Herbert Spencer remarked that "there is generally a soul of truth in things erroneous," and so there is an element of truth in Dr. Cabot's casual caustic comment. We in the service are struggling in season and out of season to indoctrinate the young civilian donning a uniform with such ideas of obligation and service as shall deprive our detractors—they will always exist—of any very substantial basis in fact. Meanwhile we are overwhelmed not so much with chagrin at our shortcomings as with painful astonishment that men of such distinction as to fill chairs of great medical schools and make annual addresses before important medical societies should forget the responsibility entailed by their high positions. If the audience addressed contained a sprinkling of disgruntled, discharged, temporary Army doctors, the remarks quoted may have been agreeable, but what effect do such remarks have upon the younger generation? Surely the professor is not aware of the indelible impressions produced by his expressed opinions on the recipient minds of his pupils. We can scarcely plead thoughtlessness as the excuse and we hesitate to ascribe malevolence as the cause of such a tone, but no enemy propaganda could be more effective in disorganizing the medical corps of the Army and Navy than to have such words from great teachers of the talent and education required to do the work of the medical department satisfactorily. There are people in the service who affect to hold that doctors are not an essential and integral part of the Navy—they are few and need no refutation—but we scarcely imagined that in the professional brotherhood itself any leader would say that we must not have a medical service or, having it, not endeavor to make it as good as possible. The way to improve it is not by cavil but by urging the best that our schools produce to enter and elevate it.

Our country is just now a prey to a host of powerful and subtle influences subversive of order. Money, the god of many, is passing into the hands of new and often unlettered custodians. The compulsory insurance which Dr. Cabot opposes is itself a conspicuous index of startling and dangerous tendencies. The services are making determined efforts to hold men to a calling in which work and worth rather than money are the rewards. Surely the time for belittling these services is ill chosen.

Very dutifully yours,

J. S. TAYLOR,
Captain, Medical Corps, U. S. Navy.
Editor, U. S. Naval Medical Bulletin.

ANNUAL ETHER DAY INVITATION.

The Trustees of the Massachusetts General Hospital invite all members of the medical profession to attend the Ether Day exercises at the Massachusetts General Hospital on Monday, October 18, 1920, at four o'clock. Dr. Alonzo E. Taylor of the University of Pennsylvania, will give the annual Ether Day address.

ACCEPTED ("The Journal of the A. M. A.," Aug. 7, 1920)

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2-3 p.m.	Pediatrics Dr. J. L. Morse and Associates Children's Hospital	Diseases of the Circulation Dr. P. D. White M. G. H. Nov. 2-9-16	Pediatrics Dr. J. L. Morse and Associates Children's and Infant's Hospitals	Lecture Medicine Dr. R. C. Cabot H. M. S.	Lecture Medicine Dr. R. C. Cabot H. M. S.
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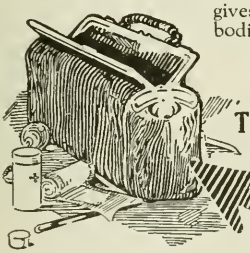

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